

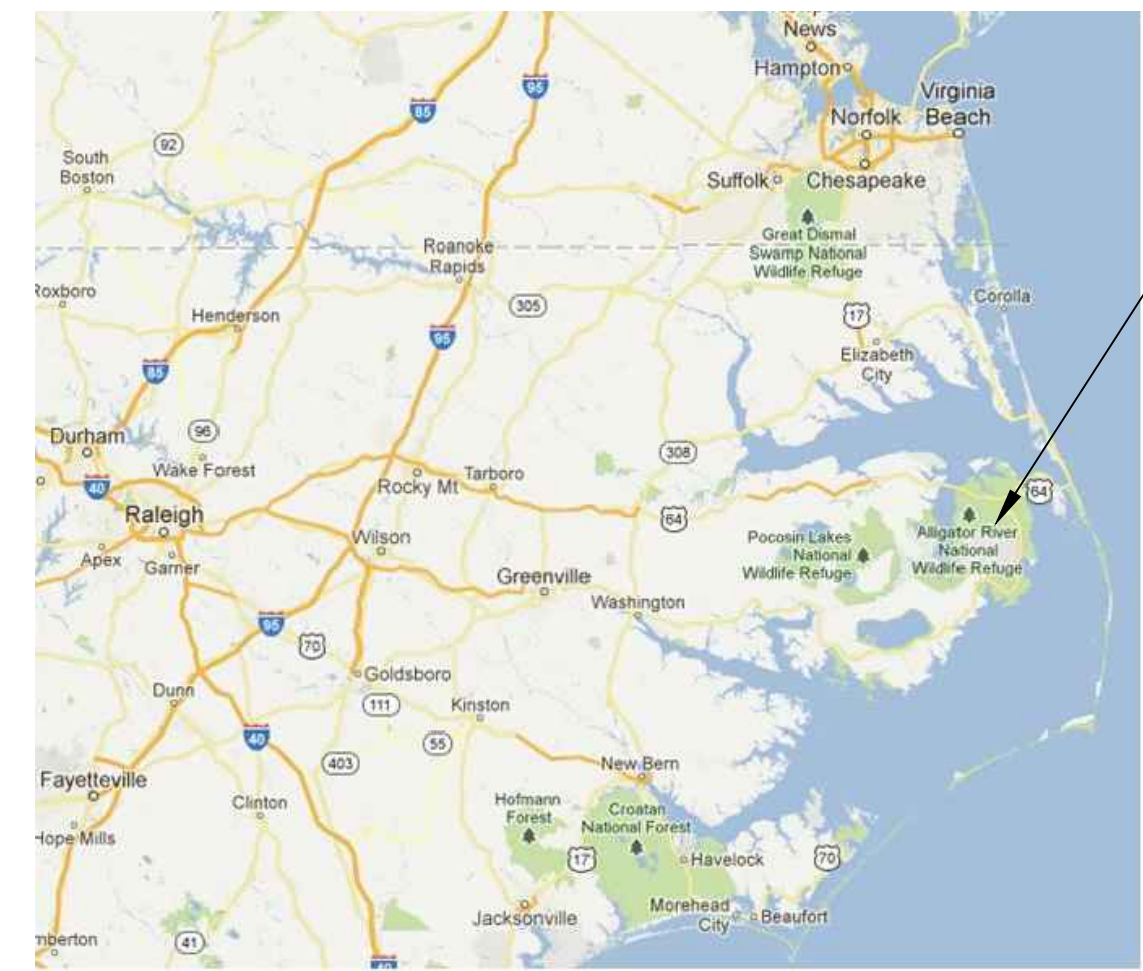
# DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS

## NAVY DARE BOMBING RANGE, DARE COUNTY, NORTH CAROLINA

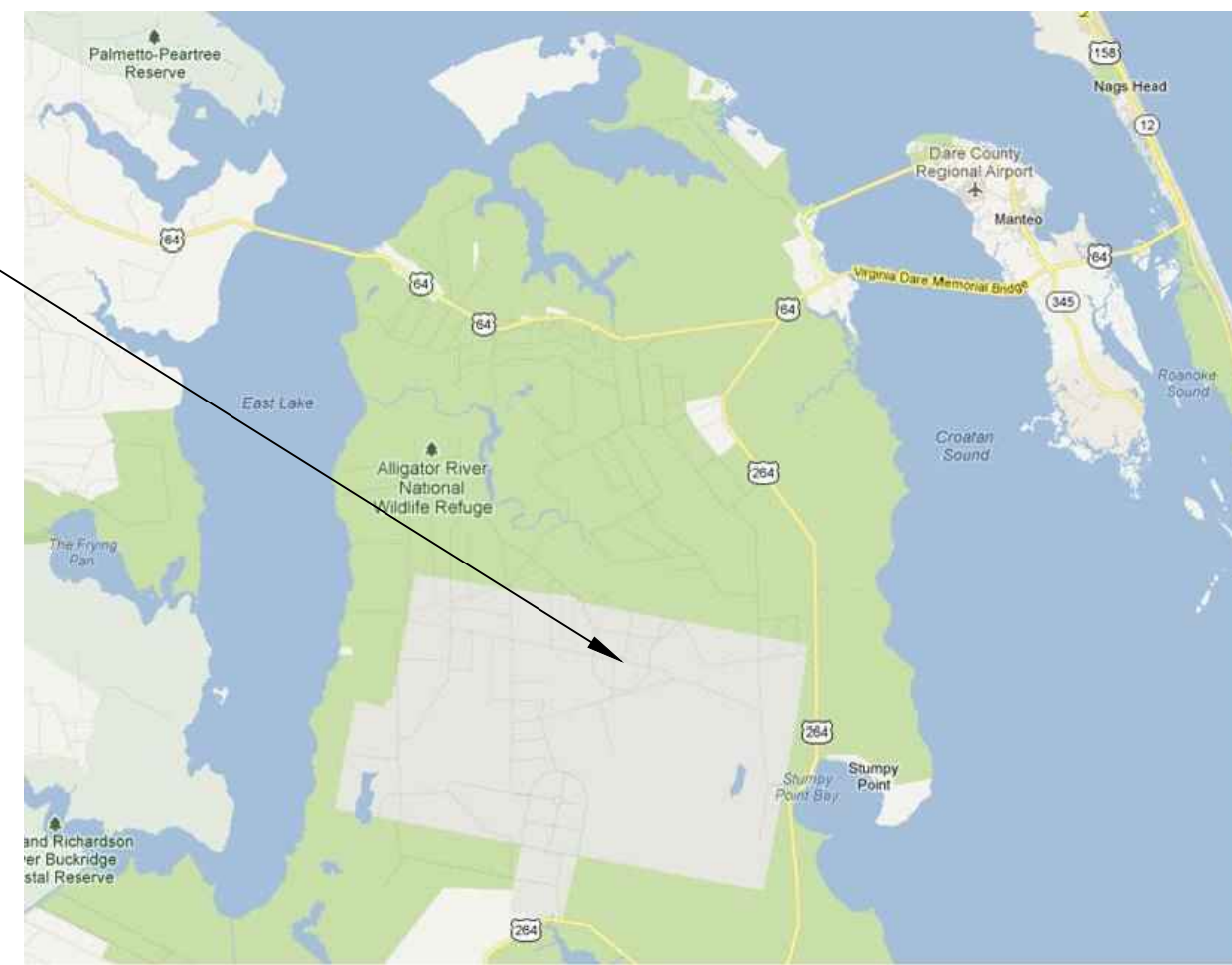
### NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND~MIDLANT

PRE-FINAL - JULY 30, 2024

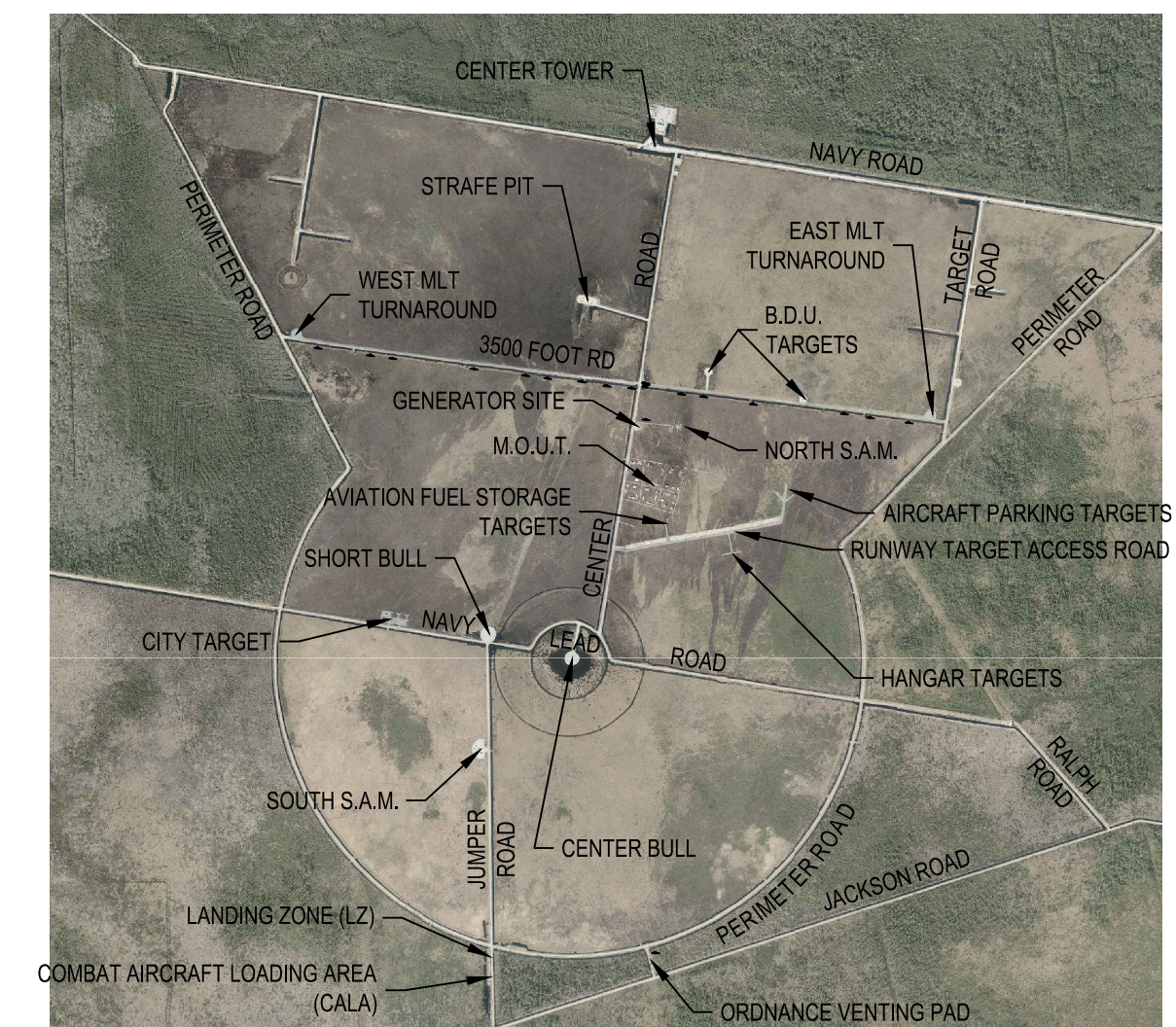
CONSTRUCTION CONTRACT NUMBER : TBD



OVERALL LOCATION PLAN  
NOT TO SCALE



OVERALL LOCATION PLAN  
NOT TO SCALE



VICINITY PLAN  
SCALE: 1"=2500'



#### LIST OF DRAWINGS

SHEET NUMBER	DWG #	NAVFAC DWG #	SHEET TITLE
GENERAL			
G-001	1	##	TITLE SHEET
G-002	#	##	GENERAL NOTES, LEGEND & ABBREVIATIONS
SURVEY			
V-001	2	##	CONTROL, LEGEND, AND SURVEY NOTES
V-002	3	##	OVERALL TOPOGRAPHIC SURVEY KEY MAP
V-103	#	##	TOPOGRAPHIC SURVEY
V-104	#	##	TOPOGRAPHIC SURVEY
V-105	#	##	TOPOGRAPHIC SURVEY
V-106	#	##	TOPOGRAPHIC SURVEY
V-107	#	##	TOPOGRAPHIC SURVEY
V-108	#	##	TOPOGRAPHIC SURVEY
V-109	#	##	TOPOGRAPHIC SURVEY
V-110	#	##	TOPOGRAPHIC SURVEY
V-111	#	##	TOPOGRAPHIC SURVEY

#### LIST OF DRAWINGS

SHEET NUMBER	DWG #	NAVFAC DWG #	SHEET TITLE
V-112	#	##	TOPOGRAPHIC SURVEY
V-113	#	##	TOPOGRAPHIC SURVEY
V-114	#	##	TOPOGRAPHIC SURVEY
V-115	#	##	TOPOGRAPHIC SURVEY
V-116	#	##	TOPOGRAPHIC SURVEY
V-117	#	##	TOPOGRAPHIC SURVEY
V-118	#	##	TOPOGRAPHIC SURVEY
V-119	#	##	TOPOGRAPHIC SURVEY
V-120	#	##	TOPOGRAPHIC SURVEY
CIVIL			
C-103	#	##	LZ AND CALA PAD IMPROVEMENTS
C-104	#	##	ORDNANCE VENTING PAD IMPROVEMENTS
C-105	#	##	CITY TARGET IMPROVEMENTS
C-106	#	##	NORTH SURFACE AIR MISSILE TARGET IMPROVEMENTS
C-113	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (1 OF 13)

#### LIST OF DRAWINGS

SHEET NUMBER	DWG #	NAVFAC DWG #	SHEET TITLE
C-114	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (2 OF 13)
C-115	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (3 OF 13)
C-116	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (4 OF 13)
C-117	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (5 OF 13)
C-118	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (6 OF 13)
C-119	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (7 OF 13)
C-120	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (8 OF 13)
C-121	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (9 OF 13)
C-122	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (10 OF 13)
C-123	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (11 OF 13)
C-124	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (12 OF 13)
C-125	#	##	3500 FOOT ROAD WIDENING IMPROVEMENTS (13 OF 13)
C-501	#	##	DETAIL SHEET

	DATE
	MARK DESCRIPTION
PRE-FINAL NOT FOR CONSTRUCTION	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	HRB   DRW HRB   CHK CBM
PM/DM	H. BREWSTER III, P.E.
BRANCH MANAGER	CBM
CHIEF ENGINEER	HSDC
FIRE PROTECTION	##
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE                  SITE IMPROVEMENTS</b> TITLE SHEET	
SCALE: AS NOTED	
EPROJECT NO.: 1682190	
CONSTR. CONTR. NO. #####-##-#####	
NAVFAC DRAWING NO. ##	
SHEET 1 OF #	
G-001	
DRAWING REVISION: 14 SEP 2023	

FILE NAME: K:\NC\darecounty\SiteWork\SiteImprovements\Development\2021\_1682190\_G-001.dwg LAYOUT NAME: G-001 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howard.brewster

### PROJECT LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING CONCRETE CURB
- EXISTING CONCRETE PAVEMENT
- EXISTING SPOT ELEVATION
- EXISTING TRAFFIC SIGN
- EXISTING BOLLARD
- EXISTING STREET LIGHT AND POLE
- EXISTING TREELINE
- EXISTING FENCE/GATE
- EXISTING UNDERGROUND COMMUNICATION LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING TELEPHONE MANHOLE/HANDHOLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING ELECTRIC MANHOLE/HANDHOLE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING UTILITY POLE
- EXISTING STORM DRAIN LINE/DIAMETER
- EXISTING CATCH BASIN/DROP INLET
- EXISTING DRAIN/STORM MANHOLE
- EXISTING SANITARY SEWER GRAVITY LINE/DIAMETER
- EXISTING SANITARY SEWER FORCEMAIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER MAIN
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING TEMPORARY BENCHMARK
- EXISTING DRAINAGE DITCH / SWALE
- EXISTING WETLAND LINE
- APPROXIMATE LIMIT OF DISTURBANCE
- SILT FENCE
- TOPSOIL STRIP AND STOCKPILE
- APPROXIMATE LIMIT OF EXCAVATION
- BASE/SUBBASE DEMOLITION
- NEW STORM DRAIN LINE/DIAMETER
- NEW CATCH BASIN/DROP INLET
- NEW SPOT ELEVATION
- MATCH NEW GRADE TO EXISTING GRADE
- NEW SWALE
- NEW TOPSOIL AND SOD
- NEW TOPSOIL AND SEED

### GENERAL PROJECT NOTES

1. THE SCOPE OF WORK INCLUDES FILLING WETLAND AREAS TO INSTALL GRAVEL PADS FOR LANDING ZONE (LZ), COMBAT AIRCRAFT LOADING AREA (CALA), ORDNANCE VENTING; CONSTRUCT ACCESS ROAD AND PAD FOR THE NORTH SURFACE-TO-AIR MISSILE (SAM) TARGET; WIDEN 3500 FOOT ROAD TO SUPPORT SAFER AND ENHANCED OPERATION OF MOBILE LAND TARGET (MLT) INCLUDING SHIFTING THE CONVOY TARGET AND REPAIRING THE TURNAROUND AREAS AND BOMB DUMMY UNIT (BDU) TARGETS; FILL VOIDED AREAS OF THE CITY TARGET TO IMPROVE ORDNANCE RECOVERY EFFORTS, AND ASSOCIATED WORK.
2. THE CONTRACTOR MUST NOT FILL WETLANDS OR BEGIN ANY LAND DISTURBANCE ACTIVITY UNTIL THE UNITED STATES ARMY CORPS OF ENGINEERS (USACE) 404 WETLANDS PERMIT AND NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NC DEQ) STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL PERMITS HAVE BEEN OBTAINED.
3. THE CONTRACTOR MUST DEMOBILIZE FROM THE SITE, REMOVING ALL EQUIPMENT, AND THE SITE MUST BE STABILIZED FOR RANGE OPERATIONS AT THE END OF ACCESS PERIOD TO THE RANGE. EQUIPMENT MAY BE STORED NEAR THE MAINTENANCE AREA/TOWER OR OTHER OFF-RANGE LOCATION AS DIRECTED BY THE RANGE MANAGER.
4. CONTRACTOR MUST BE RESPONSIBLE FOR PROMPT REPAIR OF EROSION CONTROL MEASURES DAMAGED BY RANGE OPERATIONS. COORDINATE WITH THE RANGE MANAGER FOR ACCESS TO ACCOMPLISH REPAIRS.
5. PRIOR TO CONSTRUCTION OR EXCAVATION, THE CONTRACTOR MUST ASSUME THE RESPONSIBILITY OF LOCATING ANY AND ALL UNDERGROUND OR ABOVE GROUND UTILITIES (PUBLIC OR PRIVATE) THAT MAY EXIST OR CROSS THROUGH THE AREA OF CONSTRUCTION WHETHER OR NOT THEY ARE SHOWN ON THESE PLANS. COORDINATE THE LOCATION OF EXISTING UNDERGROUND UTILITIES WITH THE CONTRACTING OFFICER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS SOLE EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
6. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE, NONEXISTENCE, SIZE, TYPE, LOCATION, ALIGNMENT, OR DEPTH OF ANY OR ALL UNDERGROUND UTILITIES OR OTHER FACILITIES. WHERE SURFACE FEATURES (MANHOLES, CATCH BASINS, VALVES, ETC.) ARE UNAVAILABLE OR INCONCLUSIVE, INFORMATION SHOWN MAY BE FROM UTILITY OWNERS' RECORDS AND/OR ELECTRONIC LINE TRACING, THE RELIABILITY OF WHICH IS UNCERTAIN. THE CONTRACTOR MUST PERFORM TEST EXCAVATIONS OR OTHER REINVESTIGATION AS NECESSARY TO VERIFY LOCATIONS AND CLEARANCES.
7. WHERE EXCAVATIONS ARE REQUIRED TO DISCONNECT OR REROUTE UTILITIES, CONTRACTOR MUST REPAIR FINISHED SURFACE TO MATCH SURROUNDING AREA UNLESS NOTED OTHERWISE.
8. LIMITS OF WETLANDS (TYP) ARE DENOTED ON THE DESIGN BASED UPON THE FIELD RUN TOPOGRAPHIC SURVEY AND ON-SITE REVIEW CONDUCTED 8/30/2023. UPLANDS CONSIST OF FILLED AREAS SUCH AS EXISTING TARGETS, MATERIAL LAYDOWN AREAS, ROADS, AND DRIVES; ALL OTHER AREAS ARE WETLANDS.
9. CONTRACTOR MUST COMPLY WITH ALL PERMIT REQUIREMENTS OF USACE 404 WETLANDS PERMIT, AND NC DEQ E&S AND STORM WATER PERMITS.
10. SILT FENCE SHALL BE IN COMPLIANCE WITH NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL. WHERE STANDING WATER OF MORE THAN 12 INCHES OCCURS, USE SEDIMENT CURTAIN WHERE SILT FENCE IS INDICATED ON THE DRAWINGS. ADJUST IN FIELD IF CHANGES OCCUR IN WATER ELEVATION.
11. CONTRACTOR MUST MAINTAIN ALL ROADS ON RANGE IN GOOD CONDITION WITHIN LIMITS OF CONSTRUCTION AND ALONG HAUL ROUTES. REPAIR DAMAGE CAUSED BY CONSTRUCTION ACTIVITY, INCLUDING BRINGING MATERIAL ON SITE. REPAIRS MUST BE MADE IN A TIMELY MANNER AS TO NOT INTERRUPT RANGE OPERATION OR HINDER RANGE PERSONNEL FROM PERFORMING THEIR DUTIES.
12. CONTRACTOR MUST PROVIDE GEOTEXTILE PER MANUFACTURERS DIRECTIONS. REMOVE VEGETATION AS NEEDED AND PROVIDE A LEVELING LAYER AS REQUIRED TO PREVENT TEARS.
13. PRIOR TO COMMENCEMENT OF WORK AND A MINIMUM OF FIFTEEN (15) DAYS BEFORE STARTING WORK, CONTRACTOR MUST SUBMIT A SCHEDULE OF WORK IDENTIFYING AREAS OF WORK AND ASSOCIATED LENGTH OF TIME FOR ACCOMPLISHING WORK. SCHEDULE OF WORK MUST BE COORDINATED WITH CONTRACTING OFFICER AND FACILITIES MAINTENANCE SPECIALIST (FMS) TO ENSURE THAT THE WORK AREA WILL BE ACCESSIBLE FOR THE DURATION OF WORK.
14. ALL WORK MUST BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL RULES AND REGULATIONS.
15. ALL DIMENSIONS ARE IN FEET (FT) AND INCHES (INCH).
16. PRIOR TO COMMENCING WORK, PERFORM A VISUAL EXISTING SITE CONDITION SURVEY. THE SURVEY SHALL DENOTE THE CONDITION OF ALL EXISTING PAVEMENTS, STRUCTURES AND DEVICES WITHIN THE CONSTRUCTION LIMITS AND IN THE ACCESS ROUTE AND STAGING AREAS.
17. THE CONTRACTOR MUST FIELD VERIFY EXACT LOCATION OF UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
18. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING AND/OR DIVERTING STORM WATER DURING CONSTRUCTION AS INDICATED IN THE PROJECT SPECIFICATIONS. BYPASS PUMPING FROM AN UPSTREAM STRUCTURE TO A DOWNSTREAM STRUCTURE MAY BE REQUIRED TO AVOID IMPACT TO THE WORK/EXCAVATED AREA.
19. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING OR LIMITING AMOUNT OF EXCAVATION FROM ACCUMULATING WATER. DE-WATERING OF AN EXCAVATED AREA MUST BE FILTERED BEFORE DISCHARGE INTO THE STORM WATER SYSTEM.
20. REGRADE TURF AREAS TO PROMOTE POSITIVE DRAINAGE AND MINIMIZE PONDING.
21. NOTIFY THE CONTRACTING OFFICER AND FACILITY MAINTENANCE SPECIALIST (FMS) A MINIMUM OF 72 HOURS PRIOR TO REQUIRING ANY SECTION OF A ROADWAY TO BE CLOSED.
22. DESIGNATED SAFETY REQUIREMENTS MUST BE IN PLACE PRIOR TO STARTING WORK.
23. THOROUGHLY CLEAN ALL PAVEMENT SURFACES PRIOR TO LEAVING THE WORK SITE AT THE END OF THE WORK DAY. A POWER SWEEPER AND A VACUUM TRUCK SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE ON SITE DURING CONSTRUCTION.
24. UTILIZE WATER TO CONTROL DUST AS NECESSARY.
25. REGRADE AND/OR EXCAVATE WITH CAUTION. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DONE TO ANY UTILITY SYSTEM AND MUST BE REPAIRED TO THE SATISFACTION OF THE CONTRACTING OFFICER AT NO ADDITIONAL COST TO THE GOVERNMENT.
26. WORK AND EQUIPMENT SHALL BE IN ACCORDANCE WITH APPLICABLE CODES, UFC AND NFPA 70.
27. THE EXISTENCE, SIZE AND/OR LOCATION OF UTILITIES ARE NOT GUARANTEED BY THIS SURVEY. UTILITIES SHOWN ARE BASED ON ABOVE GROUND STRUCTURES AND AVAILABLE UTILITY PLANS. THE CONTRACTOR MUST FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
28. HAND EXCAVATE NEAR EXISTING UTILITIES.
29. TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING PROPERTY OR ITEMS TO REMAIN IN PLACE. IF THE CONTRACTOR REMOVES OR DISTURBS AN AREA DUE TO CONSTRUCTION, THE CONTRACTOR MUST RETURN THE SITE (WHERE THE CONSTRUCTION OCCURRED) BACK TO ITS ORIGINAL CONDITIONS AS APPROVED BY THE CONTRACTING OFFICER. THIS INCLUDES ALL UTILITIES.
30. TBM ARE AS INDICATED ON DRAWINGS. SEE PLANS FOR COORDINATES AND ELEVATIONS.
31. ALL QUANTITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE; CONTRACTOR SHALL FIELD VERIFY ALL QUANTITIES.
32. CONTRACTOR MUST NOTE THAT THE MAIN BRIDGE ACCESSING THE DARE COUNTY BOMBING RANGE FROM U.S ROUTE 264 IS RATED FOR 35 TONS. NO OVERWEIGHT VEHICLES WILL BE ALLOWED TO ACCESS THE RANGE USING THIS BRIDGE.
33. CONTRACTOR MUST SUBMIT TRAFFIC / ACCESS CONTROL PLAN TO CONTRACTING OFFICER PRIOR TO CONSTRUCTION.

### SYMBOLS LEGEND

- CARET SYMBOLIZES A PHOTOGRAPH OR INTERIOR ELEVATION.
- SHADED ARROW SIGNIFIES A SECTION CUT OR EXTERIOR ELEVATION.
- DETAIL, SECTION, OR ELEVATION NUMBER. NUMBER REFERENCES GRID PLACEMENT ON SHEET WHICH DETAIL IS DRAWN.
- SHEET ON WHICH DETAIL, SECTION, OR ELEVATION IS DRAWN
- DETAIL OR SECTION TITLE**  
SCALE: XX" = 1'-0"
- SHEET(S) ON WHICH DETAIL, SECTION, ELEVATION, OR PHOTOGRAPH IS CALLED OUT [INCLUDE FIRST & ATYPICAL LOCATIONS]

### ABBREVIATIONS

ALUM	ALUMINUM	MFR	MANUFACTURER
B/W	BETWEEN	MPH	MILES PER HOUR
CL	CENTERLINE	OC	ON CENTER
CMU	CONC MASONRY UNIT	PSF	POUNDS PER SQ FT
CONC	CONCRETE	PSI	POUNDS PER SQ IN
DEPT	DEPARTMENT	REINF	REINFORCING, -MENT
Ø or DIA	DIAMETER	REQ'D	REQUIRED
DIM	DIMENSION	SCHED	SCHEDULE
DWGS	DRAWINGS	SHT	SHEET
ELEV	ELEVATION	SPEC	SPECIFICATION
EXIST	EXISTING	SQ	SQUARE
FED	FEDERAL	T&B	TOP & BOTTOM
GALV	GALVANIZED	TYP	TYPICAL
KIP	1000 POUNDS	VERT	VERTICAL
KSI	KIPS PER SQ INCH	UON	UNLESS OTHERWISE
KTR	CONTRACTOR	NOTED	NOTED
LB	POUNDS	VDOT	VIRGINIA DEPT OF
LONG	LONGITUDINAL		TRANSPORTATION
MAX	MAXIMUM	W/	WITH
MIN	MINIMUM	W/O	WITHOUT

### PROPOSED WETLAND IMPACT AREAS

SITE NAME	PROPOSED WETLAND FILL (SQFT)	PROPOSED WETLAND FILL (AC)	PROPOSED WETLAND FILL (CUYD)	WETLAND TYPE
LANDING ZONE (LZ)	30	0.001	1.0	PALUSTRINE EMERGENT
COMBAT AIRCRAFT LOADING AREA (CALA) SITE	614	0.014	8.0	PALUSTRINE EMERGENT
ORDNANCE VENTING PAD	4,023	0.092	140	PALUSTRINE EMERGENT
CITY TARGET IN-FILL	25,260	0.580	2,170	PALUSTRINE EMERGENT
NORTH SURFACE-TO-AIR MISSILE (SAM) TARGET	34,250	0.786	1,200	PALUSTRINE EMERGENT
3500 FOOT ROAD	105,150	2.414	9,935	PALUSTRINE EMERGENT
<b>TOTAL WETLAND IMPACT</b>	<b>169,327</b>	<b>3.887</b>	<b>13,454</b>	

DATE

MARK DESCRIPTION

PRE-FINAL  
NOT FOR CONSTRUCTION

SEAL

AE INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES HRB | DRW HRB | CHK CBM

PMIDM H.BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION ##

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 NAVY DARE BOMBING RANGE  
 DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
 SITE IMPROVEMENTS**  
 GENERAL NOTES, LEGEND & ABBREVIATIONS

SCALE: AS NOTED

EPROJCT NO.: 1682190

CONSTR CONTR NO. #####-###-####

NAVFAC DRAWING NO. ##

SHEET # OF #

G-002

DRAWFORM REVISION: 14 SEP 2023

FILE NAME: K:\NC\darecounty\SiteWork\SiteImprovements\development\2021\_1682190\_001.dwg LAYOUT NAME: G-02 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howard.brewster

FILE NAME: K:\NC\laracom\Stemwork\stemimprovements\development\2021\_1682190\_cdr\_stemimprovements\B\_Design\DWGSS\Sheet03\_SURV\2025\_1682190\_V-001.dwg LAYOUT NAME: V-001 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howardbrewster

### SURVEY NOTES

1. THE HORIZONTAL DATUM IS NORTH CAROLINA COORDINATE SYSTEM (NAD 83 / 2011) AND THE VERTICAL DATUM IS NAVD88. BOTH WERE ESTABLISHED BY GPS OBSERVATIONS.
2. THE CONTOUR INTERVAL IS ONE (1) FOOT.
3. THE HORIZONTAL AND VERTICAL UNIT OF MEASUREMENT IS THE U.S. SURVEY FOOT.
4. THIS SURVEY WAS PREPARED FOR:  
BAMFORTH ENGINEERS + SURVEYORS  
2207 HAMPTON BLVD.  
NORFOLK, VA 23517
5. THIS SURVEY WAS PREPARED BY:  
RICE ASSOCIATES  
3145 VIRGINIA BEACH BLVD., SUITE 103  
VIRGINIA BEACH, VA 23452
6. SURVEY CONDUCTED PURSUANT TO SECTION 89C-25 OF THE NORTH CAROLINA GENERAL STATUTES.
7. SUBSURFACE NON-GRAVITY UTILITIES BASED ON GROUND MARKINGS BY OTHERS.
8. DUE TO SAFETY CONCERNS, INCLUDING UNEXPLODED ORDNANCE, CONEX BOXES IN THE MOUT AREA ARE BASED ON ORTHOIMAGERY RECEIVED FROM NC ONEMAP DATED FEBRUARY 2020, PROVIDED BY NC GEOGRAPHIC INFORMATION COORDINATING COUNCIL (GICC).
9. THIS SURVEY FOR PORTIONS OF THE NAVY DARE COUNTY BOMBING AND ELECTRONIC COMBAT RANGE WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF WILLIAM G. LIPPY, JR., FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED BETWEEN MARCH 2023 AND MAY 2023; AND THAT THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA, INCLUDING METADATA, MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.

### CONTROL POINTS

CONTROL PT. #	NORTHING	EASTING	ELEVATION	DESCRIPTION
5000	735610.93	2930949.00	4.79	ROD & CAP
5001	736029.40	2930940.16	3.87	ROD & CAP
5003	736110.99	2932980.20	4.96	ROD & CAP
5004	735779.62	2933076.14	4.56	ROD & CAP
5006	740481.70	2935877.98	3.77	ROD & CAP
5007	740661.17	2935850.27	3.53	ROD & CAP
5008	742297.03	2936390.39	3.34	ROD & CAP
5009	742419.91	2936515.45	3.72	ROD & CAP
5010	741747.90	2928459.25	2.81	ROD & CAP
5011	741584.07	2928384.14	2.91	ROD & CAP
5012	739303.48	2928077.02	3.55	ROD & CAP
5013	738172.87	2931113.12	3.42	ROD & CAP
5014	743155.53	2932816.16	2.54	ROD & CAP
5015	742684.88	2932742.81	2.66	ROD & CAP
5016	740444.64	2929512.43	3.41	ROD & CAP
5017	740403.90	2929774.91	3.35	ROD & CAP
5018	743686.55	2932678.56	2.52	ROD & CAP
5019	743740.68	2932169.09	3.09	ROD & CAP
5020	743678.09	2932942.19	3.25	ROD & CAP
5021	742858.52	2936956.32	3.30	MAG NAIL
5022	743179.20	2937003.17	3.22	MAG NAIL
5023	744330.48	2928093.80	3.61	MAG NAIL
5024	744278.09	2928130.77	2.94	MAG NAIL

### EXISTING STORM SCHEDULE

- 001 PIPE END (796)  
INV. 42" (S) = -1.60; CMP
- 002 PIPE END (797)  
INV. 42" (N) = -1.46; CMP
- 003 PIPE END (804)  
INV. 48" (SW) = -1.75; CMP
- 004 PIPE END (803)  
INV. 48" (NE) = -1.51; CMP
- 005 PIPE END (802)  
APPROX. INV. 48" (SE) = -3.28; CMP
- 006 PIPE END (801)  
INV. 48" (NW) = -2.36; CMP
- 007 PIPE END (807)  
INV. = 1/A (BURIED)  
TOP OF PIPE = -0.18
- 008 PIPE END (806)  
INV. = 1/A (BURIED)  
TOP OF PIPE = 0.74

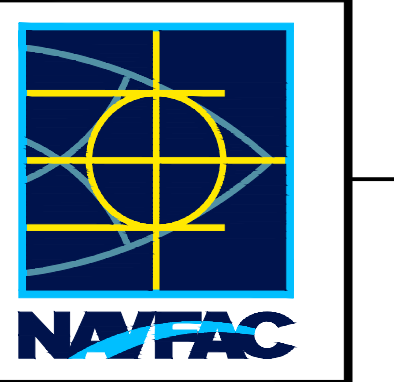
### EXISTING SITE NOTES

- 01 10' CHAIN LINK FENCE WITH GATE
- 02 BASE OF EXISTING UTILITY POLE (LEANING)
- 03 APPROX. LOCATION OF EXISTING OVERHEAD LINE
- 04 METAL GATE POST, STEEL CABLE STRUNG BETWEEN POSTS
- 05 WOODEN RANGE POLE

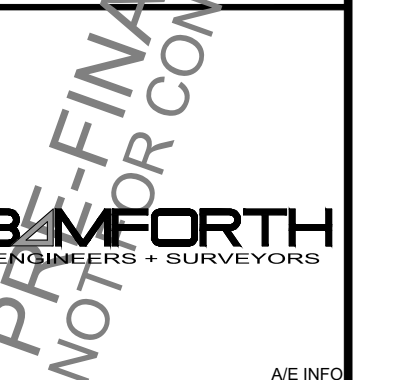
### LEGEND

	EXISTING (EXST.)
SPOT ELEVATION	+32.24
BOREHOLE	⊗
CONCRETE PAVEMENT	CONC.
CONTOUR	40
CONTROL POINT	△ PT #4
EDGE OF WOODS	~~~~~
FENCE	X #
GRAVEL	GRAVEL
TOP OF BANK (T.O.B.)	T.O.B.
TOE OF SLOPE (T.O.S.)	T.O.S.
EDGE OF WETLAND	~~~~~
OVERHEAD (OVHD.) ELECTRIC (ELEC.)	E E
UNDERGROUND (UGND.) FIBER OPTICS (FO)	FO
UNDERGROUND (UGND.) STORM DRAINAGE (SD)	SD 24" CONC.
CULVERT/PIPE END	< #
MANHOLE (M.H.), STORM DRAINAGE (D)	⊙ #
POST/POLE	•
UTILITY POLE	⊝
CONCRETE	CONC.
CORRUGATED METAL PIPE	CMP
INACCESSIBLE	1/A

MARK	DESCRIPTION	DATE



PRE-FINAL NOT FOR CONSTRUCTION



APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PMID H.BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 NAVY DARE BOMBING RANGE  
 DARE COUNTY, NORTH CAROLINA  
 DARE COUNTY BOMBING RANGE  
 SITE IMPROVEMENTS  
 CONTROL, LEGEND, AND SURVEY NOTES

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

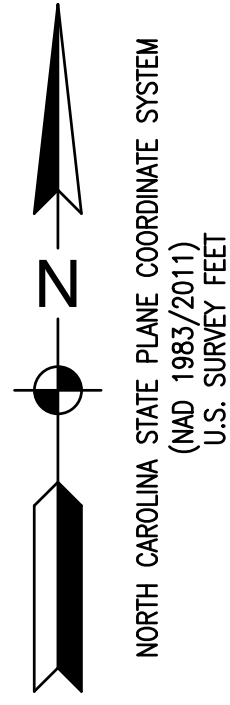
SHEET 2 OF #

V-001

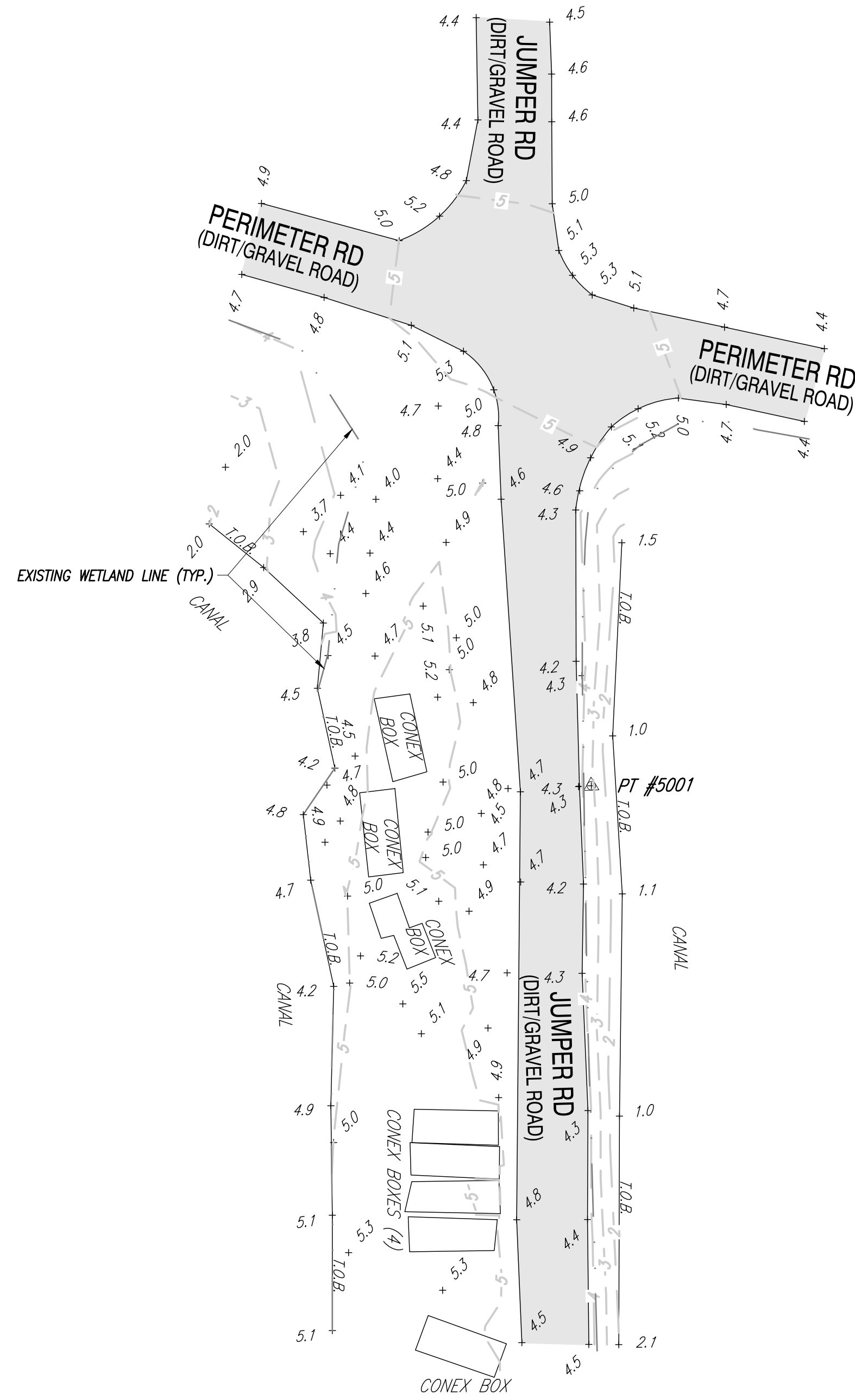
DRAWFORM REVISION: 14 SEP 2023



FILE NAME: K:\NC\darecounty\SiteWork\SiteImprovements\Development\2021\_1682190\_dcr\_siteimprovements\B\_Design\DWG\SS\Sheet03\_SURV\1682190\_V-103.dwg LAYOUT NAME: V-103 PLOTTED: Tuesday, July 30, 2024 - 11:37am USER: howardbrewster

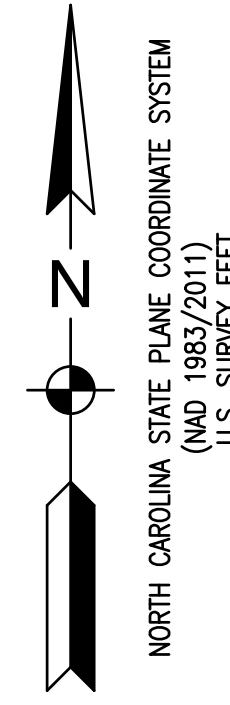
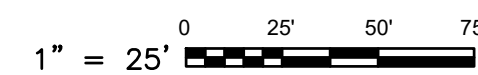


### LANDING ZONE (LZ)

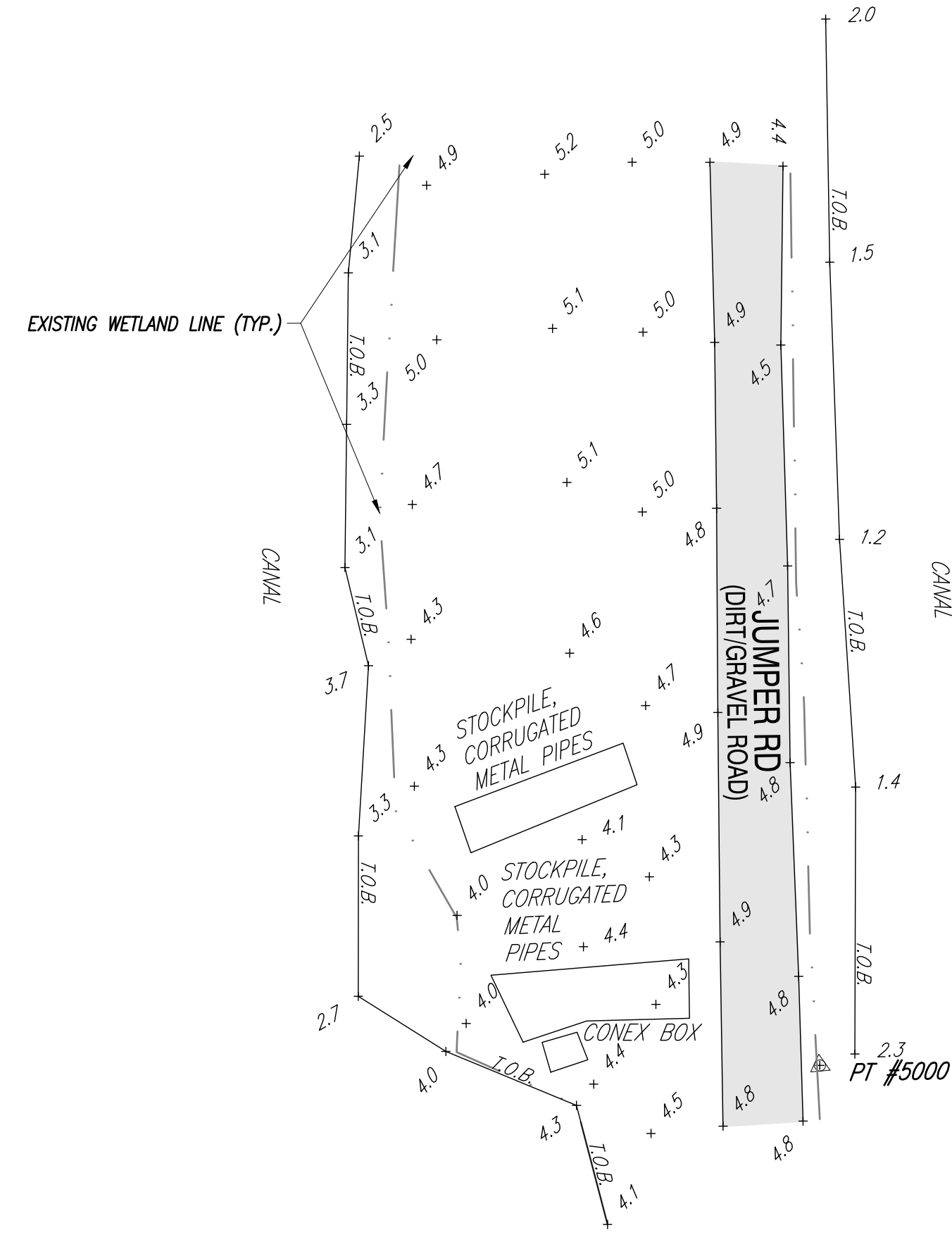


EXISTING GRAVEL AREA

GRAPHIC SCALE

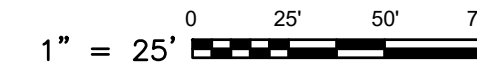


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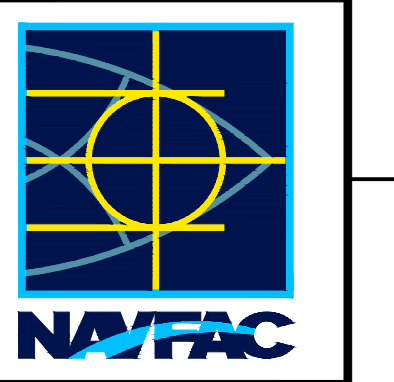


EXISTING GRAVEL AREA

GRAPHIC SCALE



MARK	DESCRIPTION	#	#	#	DATE



**PRE-FINAL**  
**NOT FOR CONSTRUCTION**  
**SEAL**  
**BM-FORTH**  
ENGINEERS - SURVEYORS  
AE INFD

APPROVED  
FOR COMMANDER NAVFAC  
ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PMID H.BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA FEAD  
NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**  
TOPOGRAPHIC SURVEY

SCALE: AS NOTED

EPROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

V-103

DRAWFORM REVISION: 14 SEP 2023

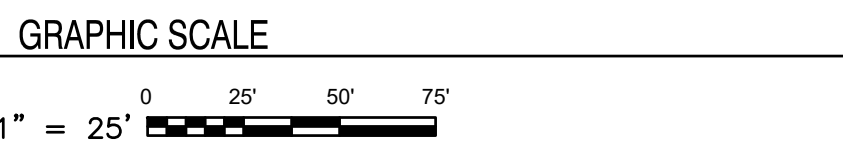
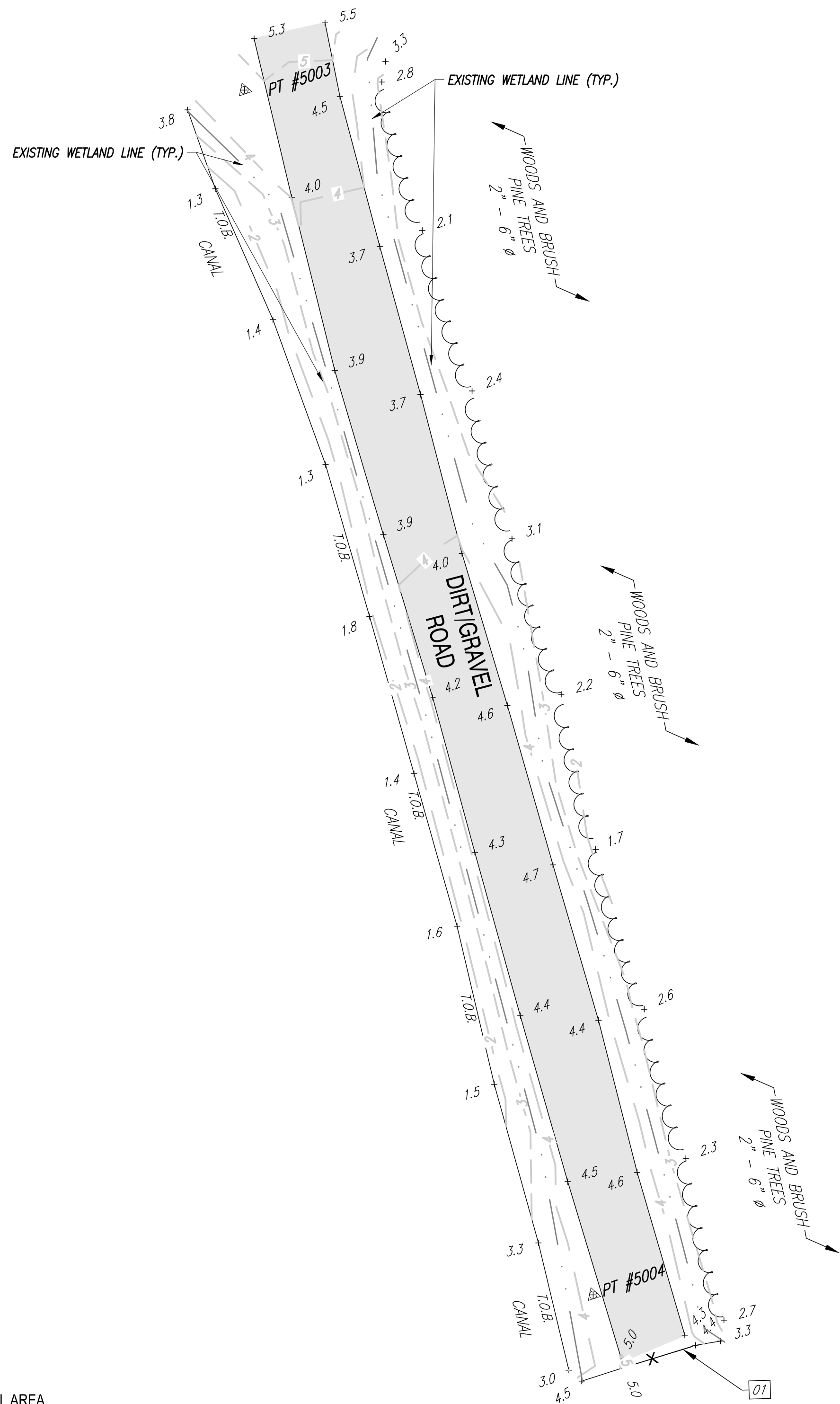
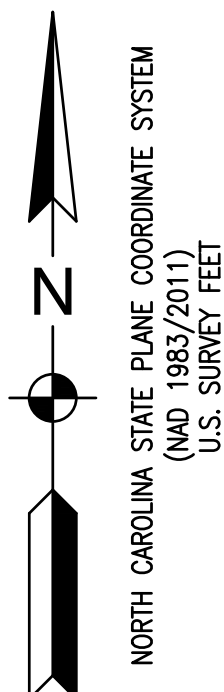
D

C

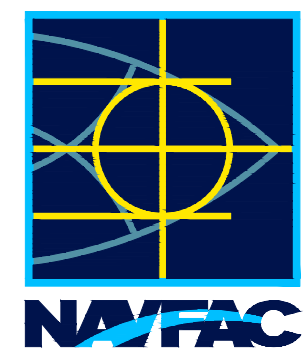
B

A

# ORDNANCE VENTING PAD



MARK	DESCRIPTION	#	#	DATE



**PRE-FINAL**  
 NOT FOR CONSTRUCTION  
 SEAL  
**B&M FORTH**  
 ENGINEERS + SURVEYORS  
 AE INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM DM H. BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 PWD OCEANA FEAD  
 NAVY DARE BOMBING RANGE  
 DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE**  
**SITE IMPROVEMENTS**  
 TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

V-104

FILE NAME: K:\NC\clarecounty\Site\work\improvements\development\2021\_182190\_cdr\_sti\improvements\B\_Design\DWGS\Sheet\03\_SURV\2025\_182190\_V-105.dwg LAYOUT NAME: V-105 PLOTTED: Tuesday, July 30, 2024 - 11:37am USER: howardbrewster

1 2 3 4 5

D

D

C

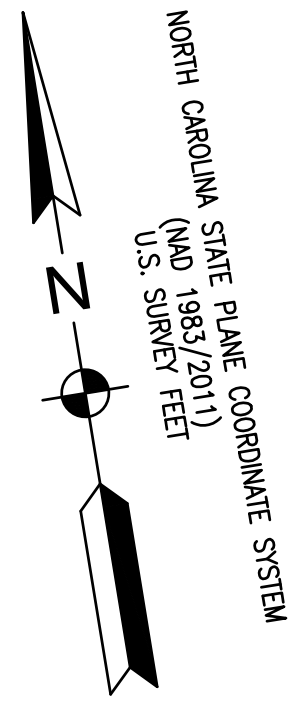
C

B

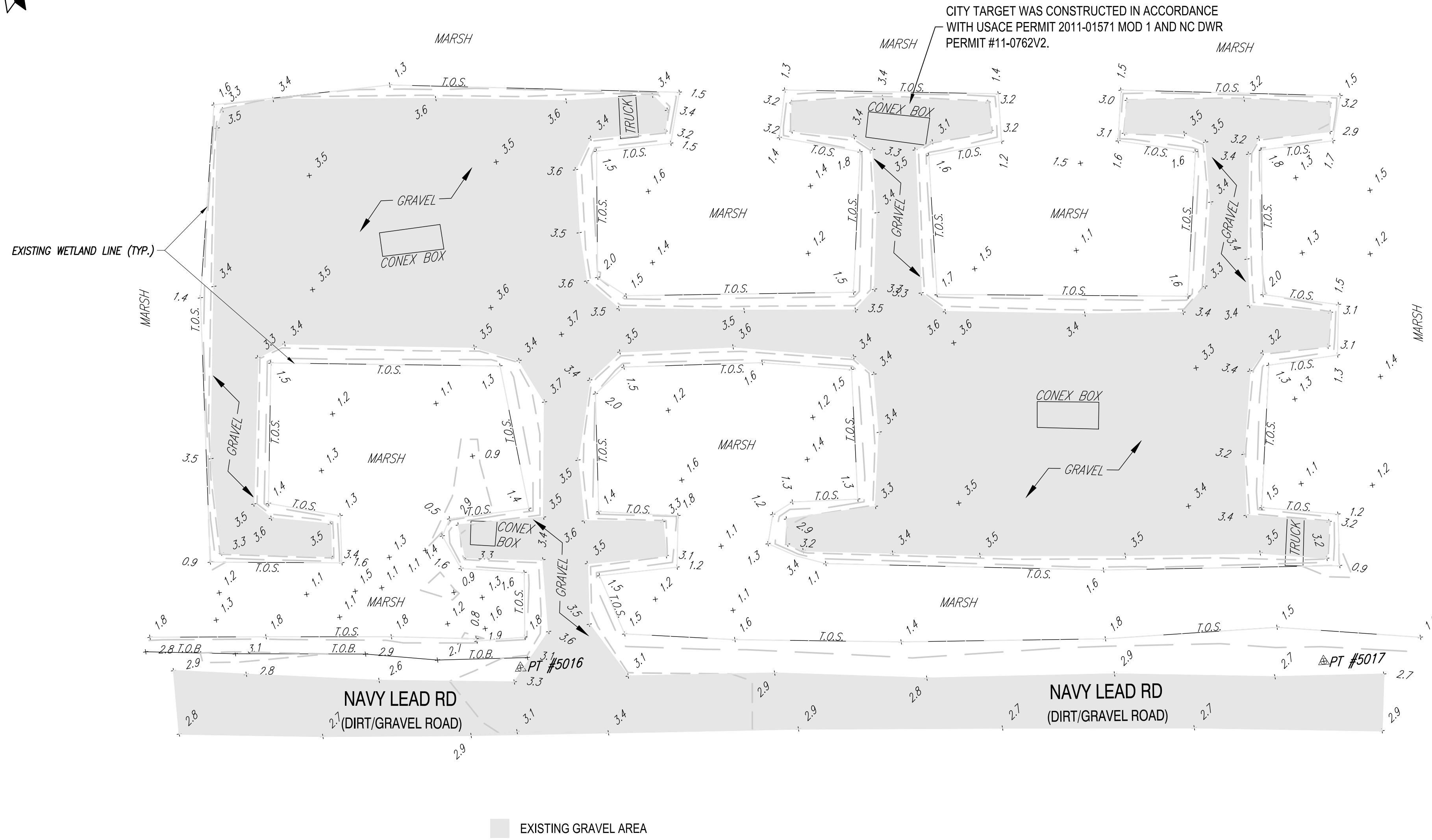
B

A

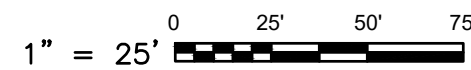
A



# CITY TARGET GAPS



GRAPHIC SCALE



1 2 3 4 5

MARK	DESCRIPTION	DATE



PRE-FINAL NOT FOR CONSTRUCTION

AE INTD

**BEAUFORTH**  
ENGINEERS + SURVEYORS

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PMDM H. BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT

NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA

NAVY DARE BOMBING RANGE

DARE COUNTY, NORTH CAROLINA

**DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS**

TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

**V-105**

DRAWING REVISION: 14 SEP 2023

FILE NAME: K:\NC\caracounty\SiteWork\SiteImprovements\Development\2021\_1682190\_cdr\_siteimprovements\B\_Design\DWGS\Sheet\03\_SURV\2025\_1682190\_V-106.dwg LAYOUT NAME: V-106 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howardbrewster

D

C

B

A

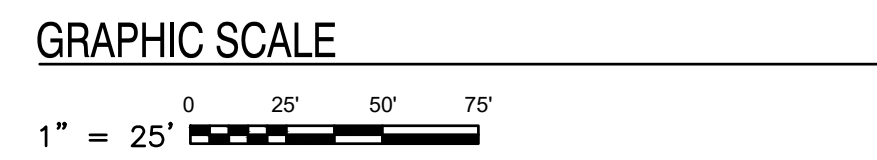
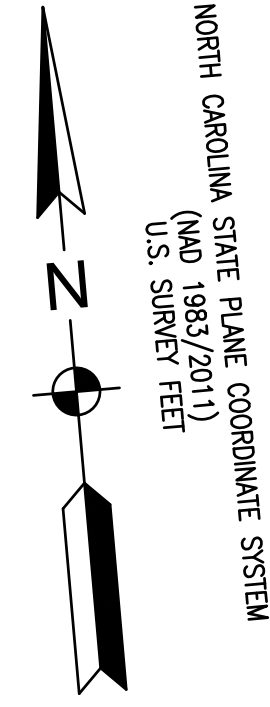
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2

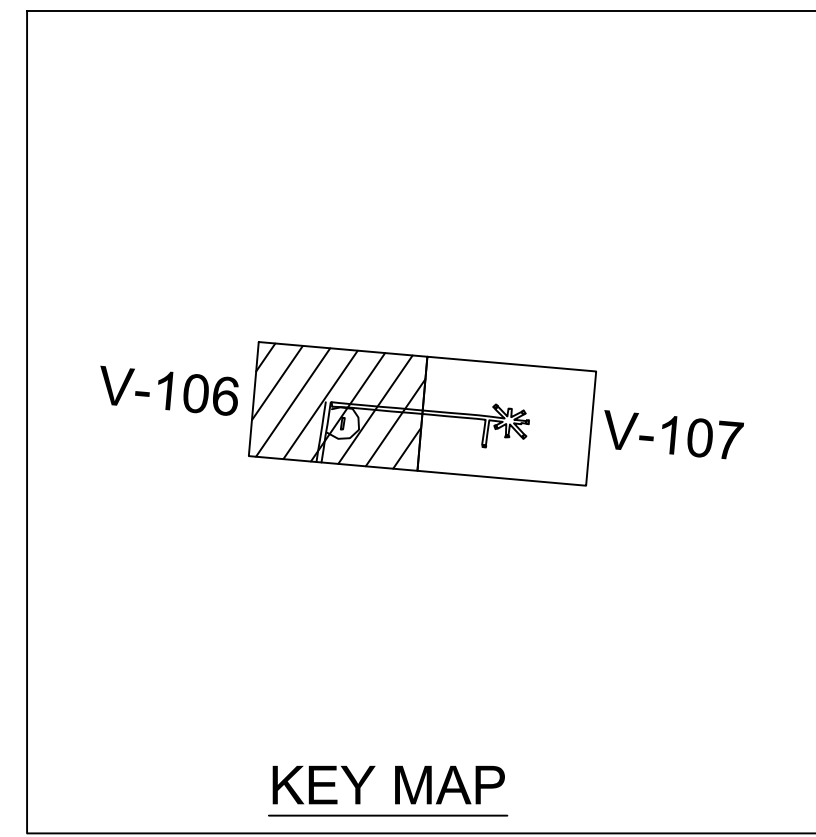
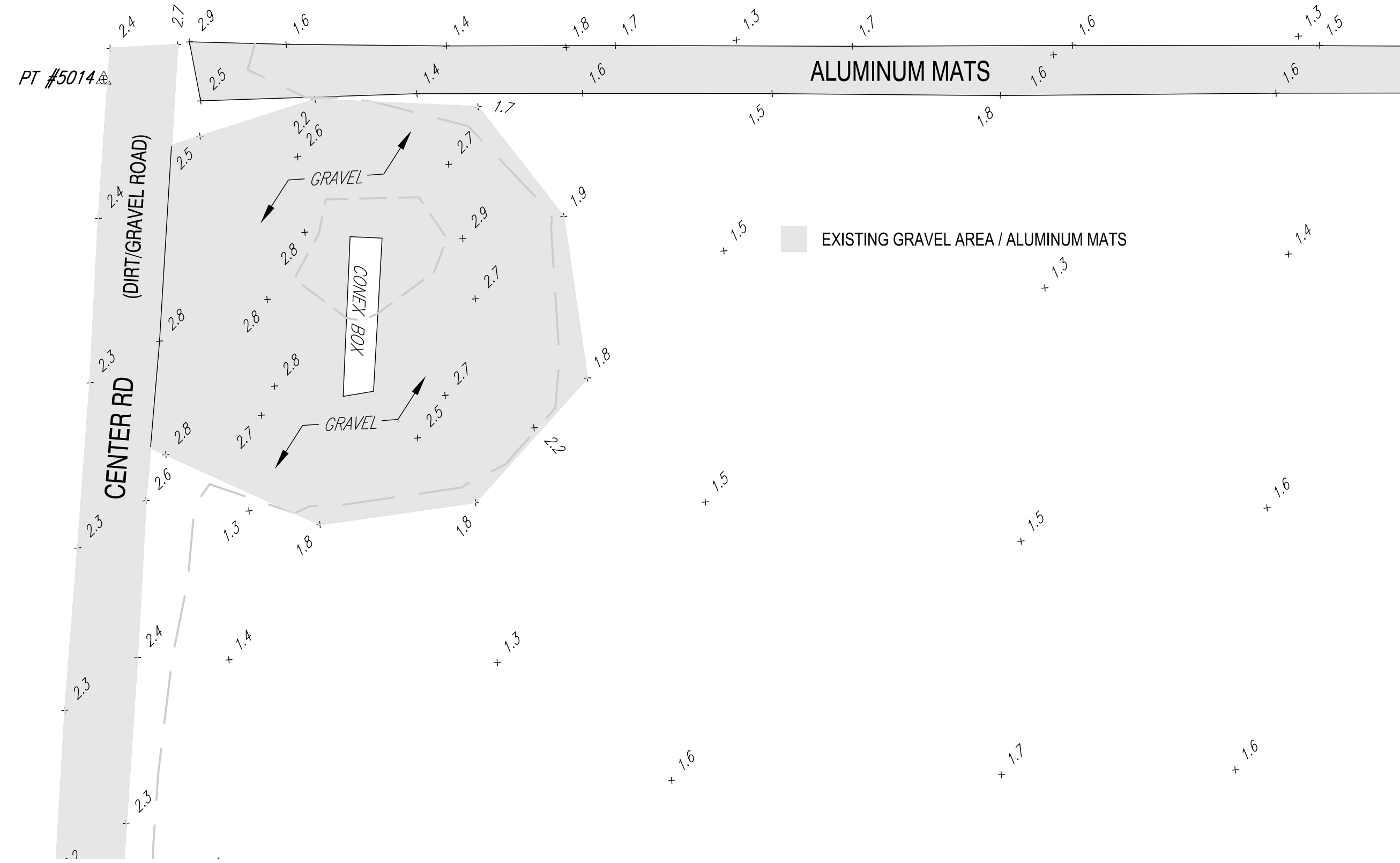
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4

5

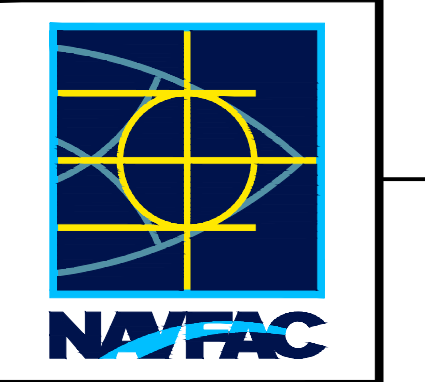


# NORTH SURFACE-TO-AIR MISSILE (SAM) TARGET



MATCH LINE SEE SHEET V-107

MARK	DESCRIPTION	DATE



PRE-FINAL NOT FOR CONSTRUCTION

**BREWSTER**  
ENGINEERS - SURVEYORS

AE INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM/DM H. BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS**  
TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

V-106

DRAWFORM REVISION: 14 SEP 2023

D

C

B

A

1

2

3

4

5



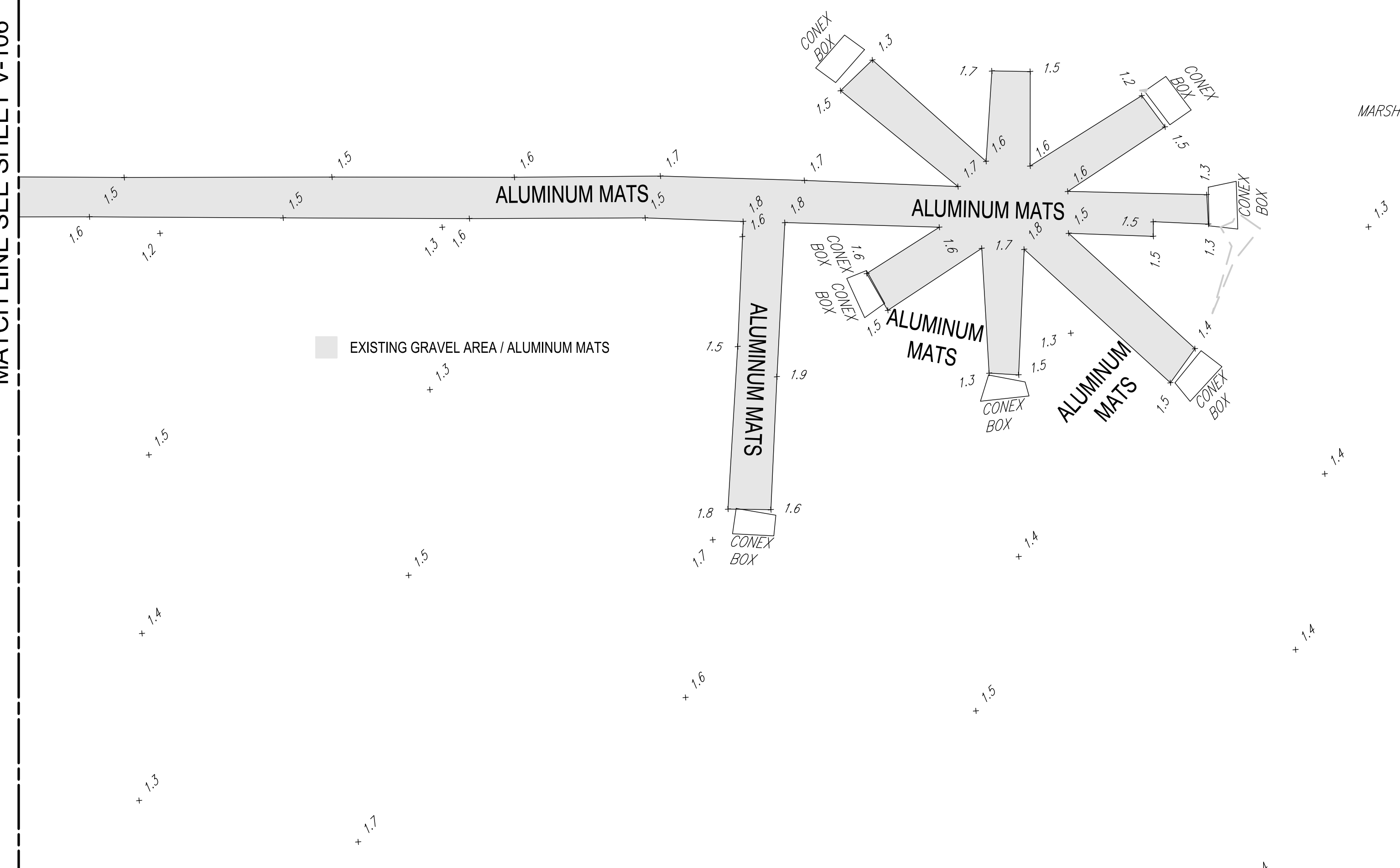
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1 2 3 4 5

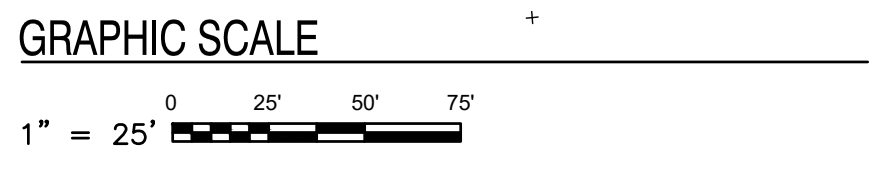
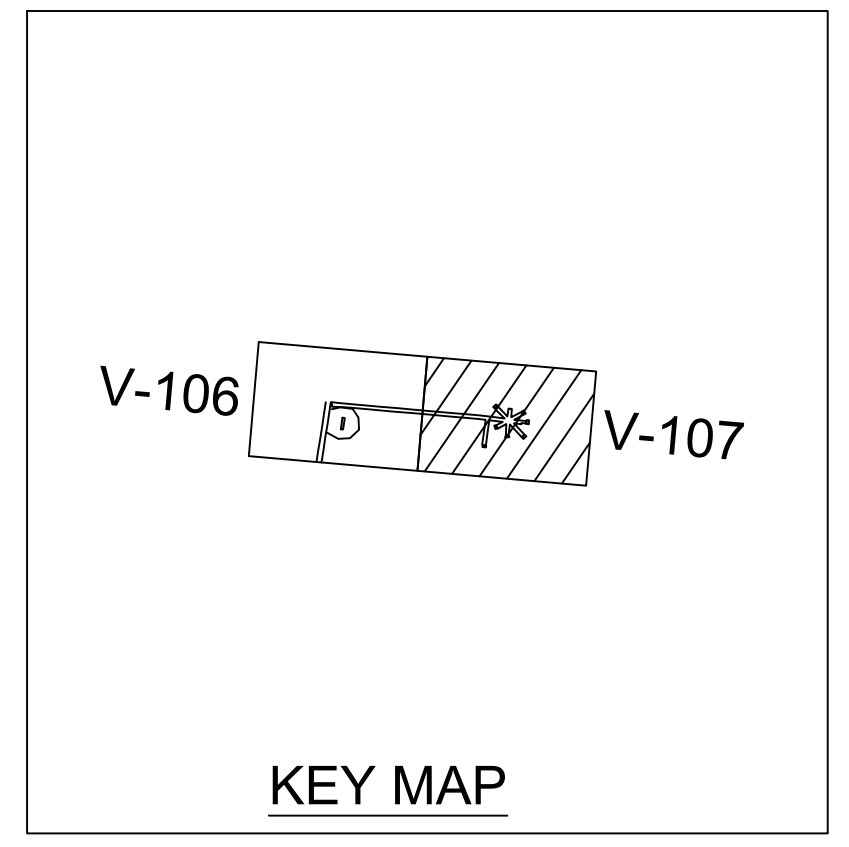
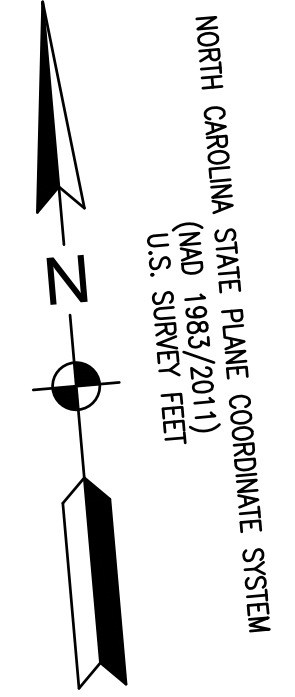
D  
C  
B  
A

MATCH LINE SEE SHEET V-106

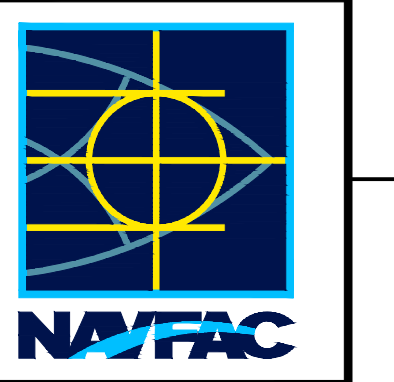
# NORTH SURFACE-TO-AIR MISSILE (SAM) TARGET



MARSH



MARK	DESCRIPTION	DATE



**PRE-FINAL**  
 NOT FOR CONSTRUCTION

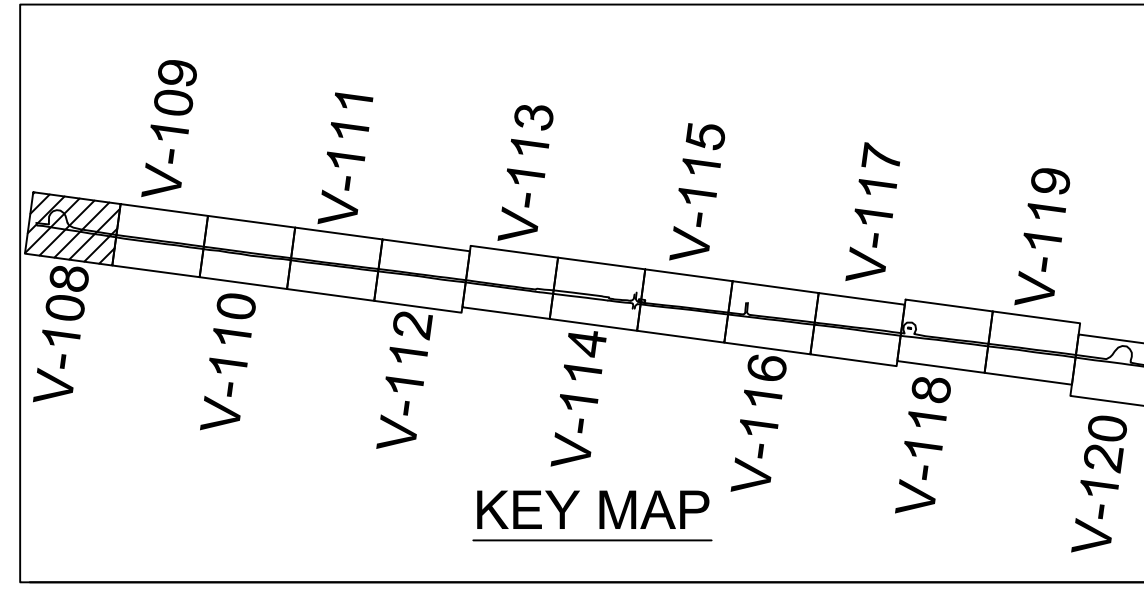
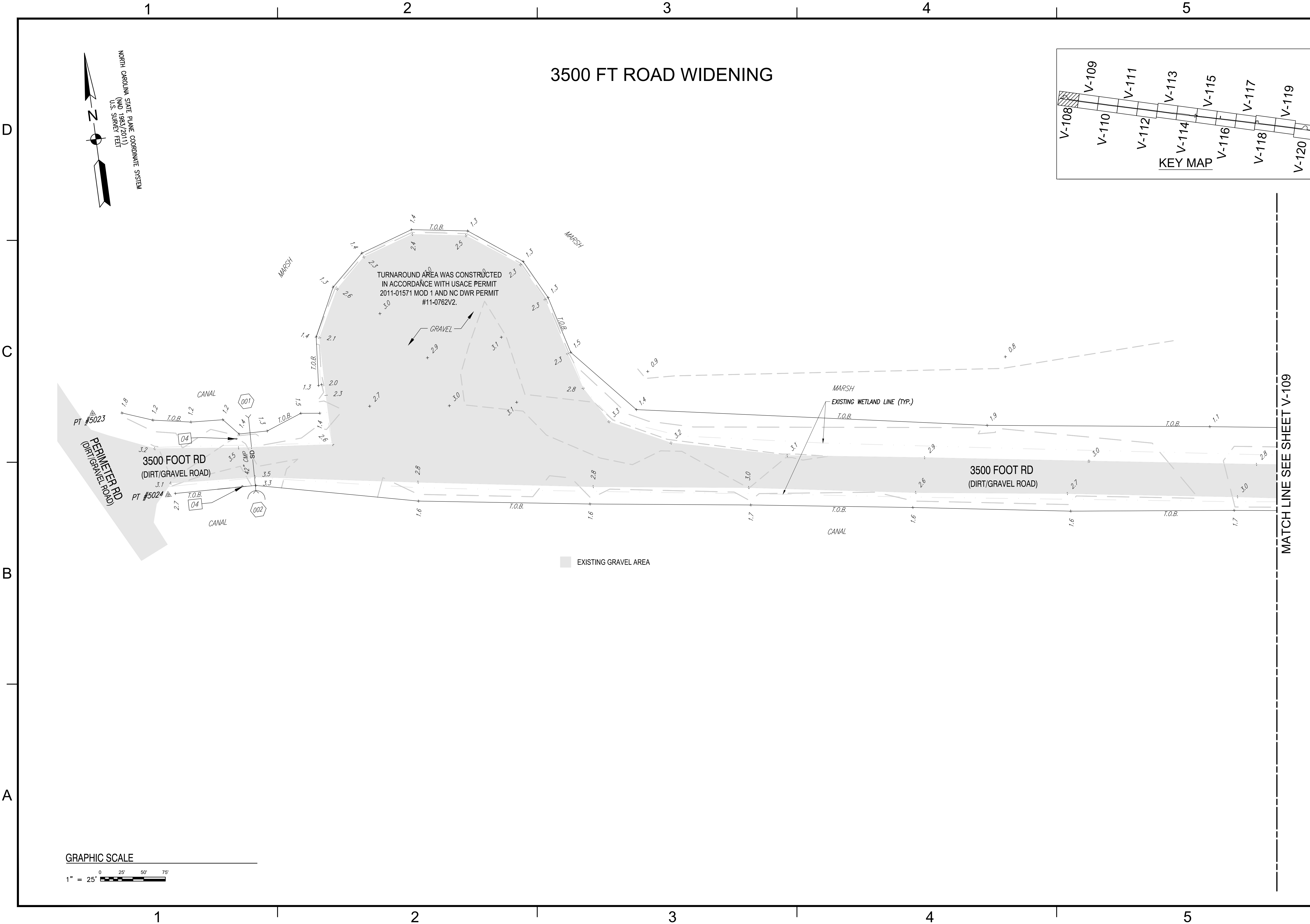
**BAMFORTH**  
 ENGINEERS + SURVEYORS

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE #####
DES HRB   DRW HRB   CHK CBM
PM DM H. BREWSTER III, P.E.
BRANCH MANAGER CBM
CHIEF ENGINEER HSDC
FIRE PROTECTION ##

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 PWD OCEANA FEAD  
 NAVY DARE BOMBING RANGE  
 DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
 SITE IMPROVEMENTS**  
 TOPOGRAPHIC SURVEY

SCALE: AS NOTED
PROJECT NO.: 1682190
CONSTR. CONTR. NO. #####
NAVFAC DRAWING NO. ##
SHEET # OF #
V-107

FILE NAME: K:\NC\darecounty\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_cdr\_stemprovementsB\_Design\DWG\SS\Sheet03\_SURV\2025\_1682190\_V-108.dwg LAYOUT NAME: V-108 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howardbrewster

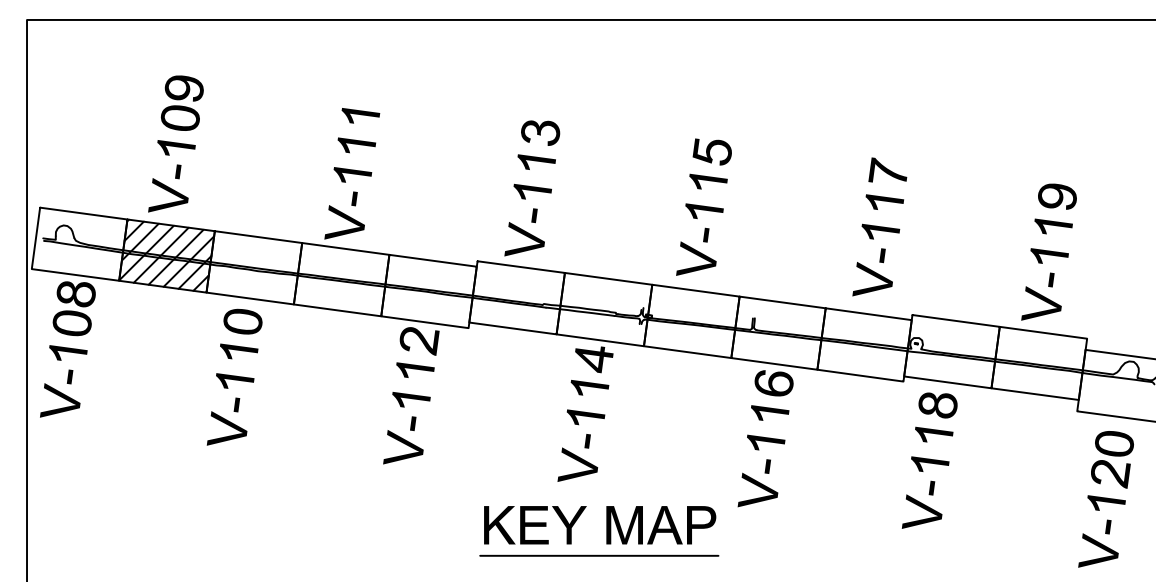
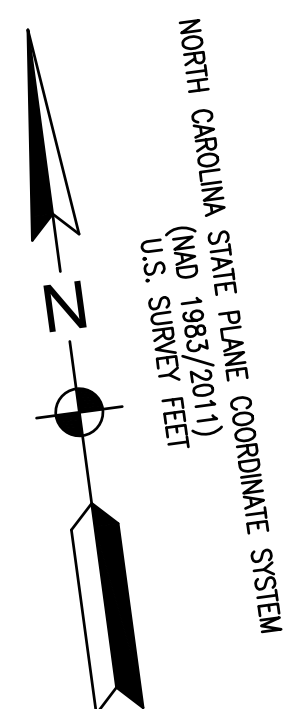


MATCH LINE SEE SHEET V-109

DATE		##	##	##	##
MARK		##	##	##	##
DESCRIPTION		##	##	##	##
<p><b>PRE-FINAL NOT FOR CONSTRUCTION</b></p>					
<p><b>BRIMFORTH ENGINEERS + SURVEYORS</b></p>					
APPROVED					
FOR COMMANDER NAVFAC					
ACTIVITY					
SATISFACTORY TO DATE #####					
DES	HRB	DRW	HRB	CHK	CBM
PMDM	H. BREWSTER III, P.E.				
BRANCH MANAGER	CBM				
CHIEF ENGINEER	HSDC				
FIRE PROTECTION	##				
<p>DEPARTMENT OF THE NAVY</p> <p>NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND</p> <p>NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT</p> <p>NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA</p> <p>NAVY DARE BOMBING RANGE</p> <p>DARE COUNTY, NORTH CAROLINA</p> <p><b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b></p> <p>TOPOGRAPHIC SURVEY</p>					
SCALE: AS NOTED					
PROJECT NO.: 1682190					
CONSTR. CONTR. NO. #####					
NAVFAC DRAWING NO. ##					
SHEET	#	OF	#		
<b>V-108</b>					
DRAWFORM REVISION: 14 SEP 2023					

FILE NAME: K:\NC\darecounty\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_cdbz\_siteimprovements\B\_Design\DWGS\Sheet03\_SURV\2025\_1682190\_V-109.dwg LAYOUT NAME: V-109 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howardbrewster

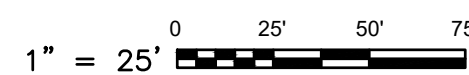
# 3500 FT ROAD WIDENING



MATCH LINE SEE SHEET V-108

MATCH LINE SEE SHEET V-110

GRAPHIC SCALE



MARSH

MARSH

3500 FOOT RD  
(DIRT/GRAVEL ROAD)

3500 FOOT RD  
(DIRT/GRAVEL ROAD)

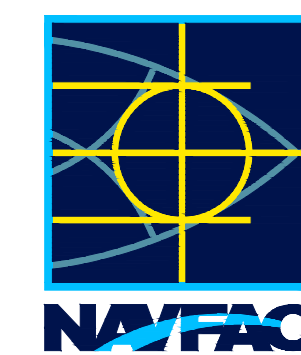
CANAL

CANAL

EXISTING GRAVEL AREA

EXISTING WETLAND LINE (TYP.)

MARK	DESCRIPTION	DATE



**PRE-FINAL**  
NOT FOR CONSTRUCTION

**BR FORTH**  
ENGINEERS & SURVEYORS

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM/D H. BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

NAVFAC DRAWING NO. #

SHEET # OF #

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA HEAD

NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**  
TOPOGRAPHIC SURVEY

SCALE: AS NOTED

EPROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

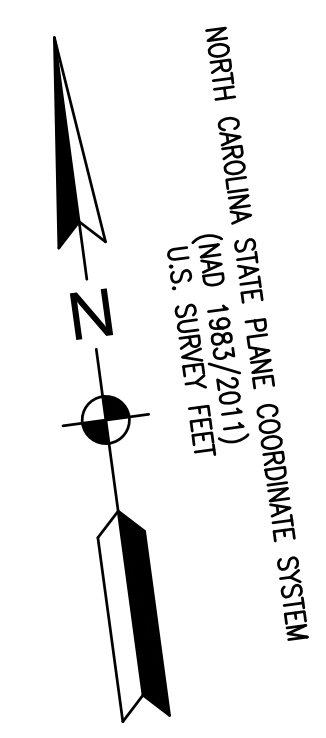
SHEET # OF #

V-109

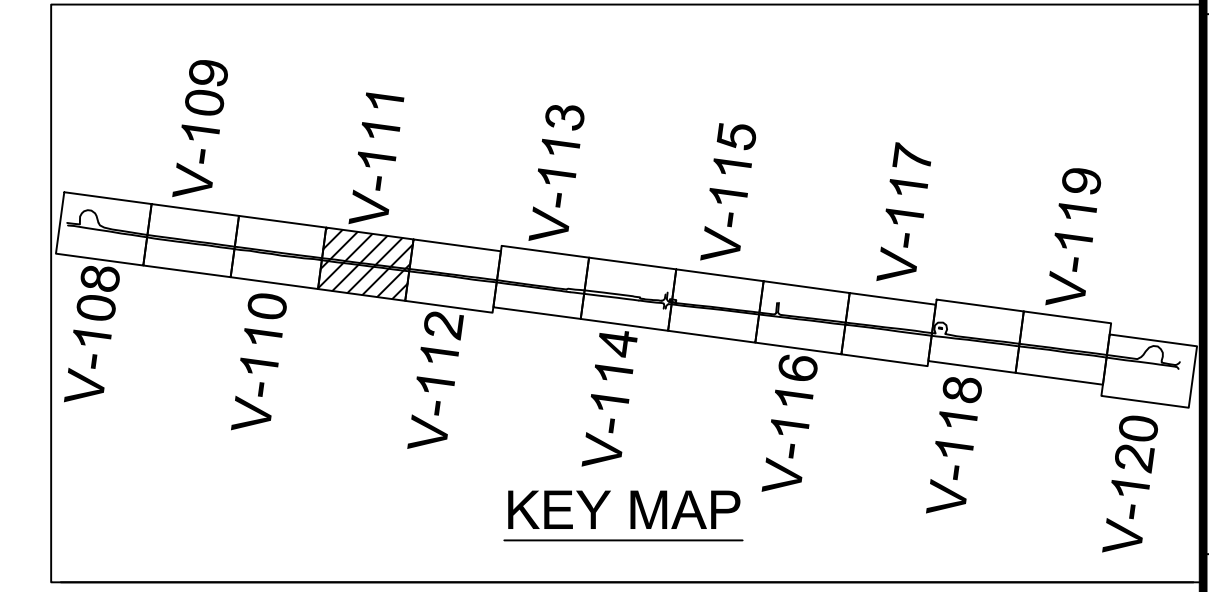
DRAWFORM REVISION: 14 SEP 2023



FILE NAME: K:\NC\clara\county\Site\work\site\improvements\development\2021\_1682190\_04r\_siteimprovements\B\_Design\DWGS\Sheet03\_SURV\2025\_1682190\_V-111.dwg LAYOUT NAME: V-111 PLOTTED: Tuesday, July 30, 2024 - 11:39am USER: howardbrewster

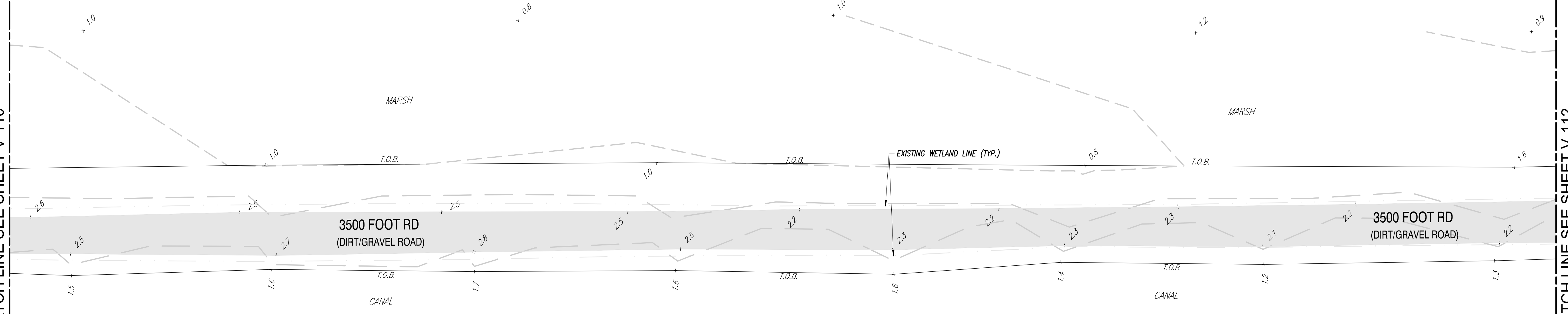


# 3500 FT ROAD WIDENING

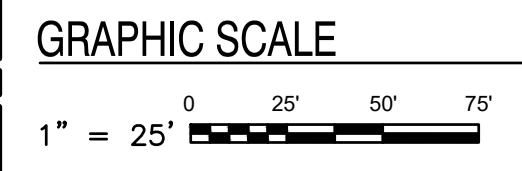


MATCH LINE SEE SHEET V-110

MATCH LINE SEE SHEET V-112



EXISTING GRAVEL AREA



MARK	DESCRIPTION	DATE



**PRE-FINAL**  
NOT FOR CONSTRUCTION

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM/D M H.BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT

NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA

NAVY DARE BOMBING RANGE

DARE COUNTY, NORTH CAROLINA

**DARE COUNTY BOMBING RANGE**

**SITE IMPROVEMENTS**

TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. #

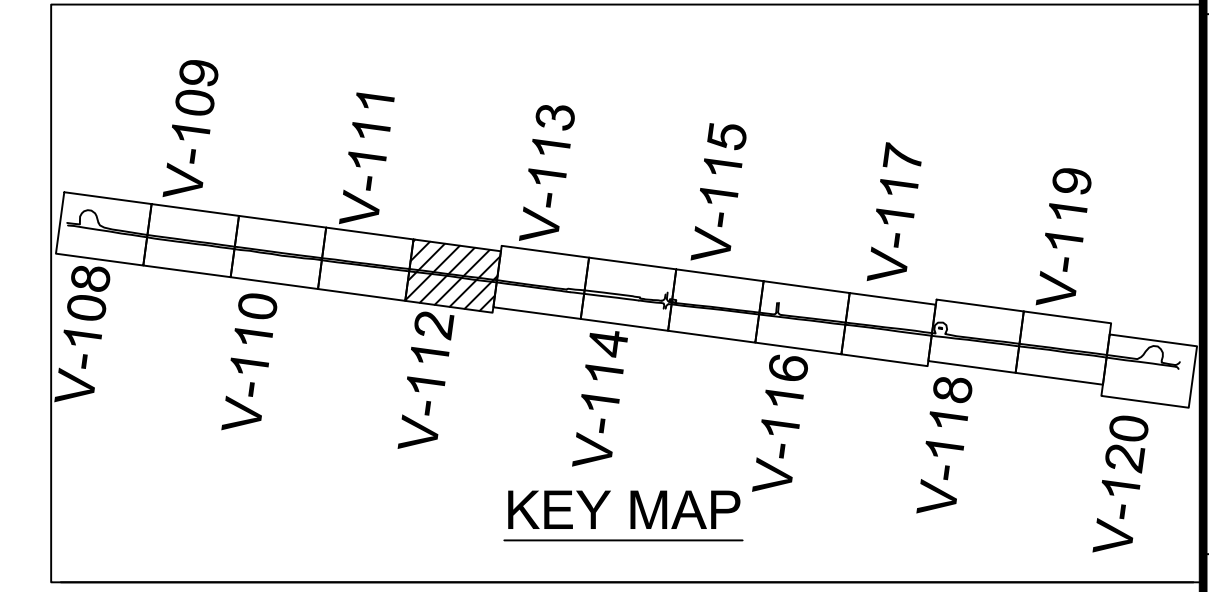
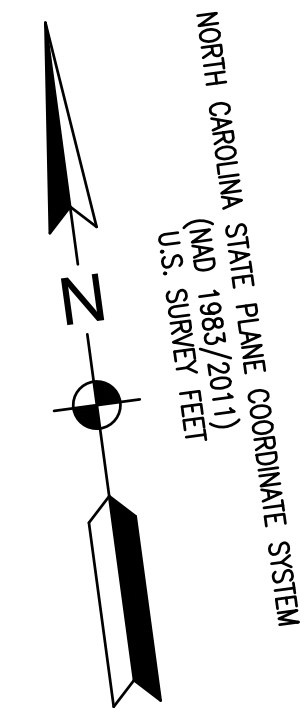
SHEET # OF #

**V-111**

DRAWFORM REVISION: 14 SEP 2023

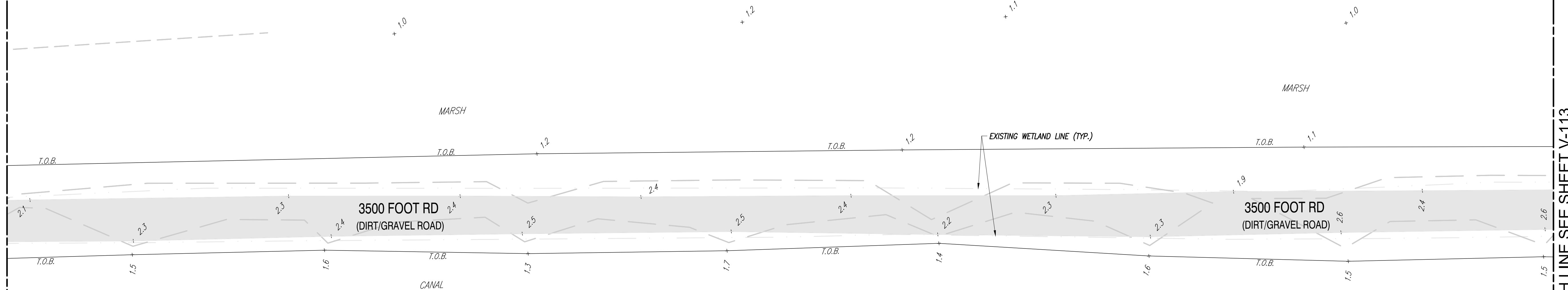
FILE NAME: K:\NC\clearcounty\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_cdr\_siteimprovements\B\_Design\DWG\SS\Sheet03\_SURV\2025\_1682190\_V-112.dwg LAYOUT NAME: V-112 PLOTTED: Tuesday, July 30, 2024 - 11:38am USER: howardbrewster

# 3500 FT ROAD WIDENING



MATCH LINE SEE SHEET V-111

MATCH LINE SEE SHEET V-113



EXISTING GRAVEL AREA



DATE	##	##	##	##	##	##	##	##	##
MARK	##	##	##	##	##	##	##	##	##
DESCRIPTION	##	##	##	##	##	##	##	##	##

**PRE-FINAL NOT FOR CONSTRUCTION**

**BE FORTH**  
ENGINEERS - SURVEYORS

AE INTD

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM DM H. BREWSTER III, P. E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION ##

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA FEAD  
NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**  
TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

**V-112**

DRAWFORM REVISION: 14 SEP 2023

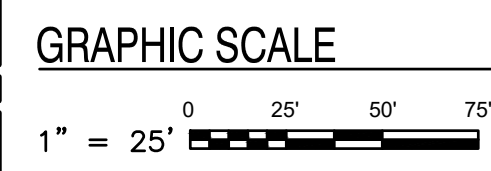
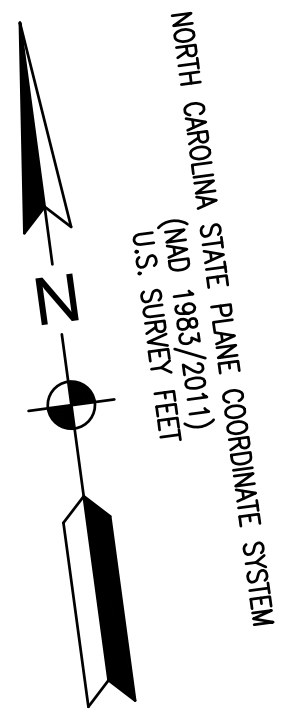
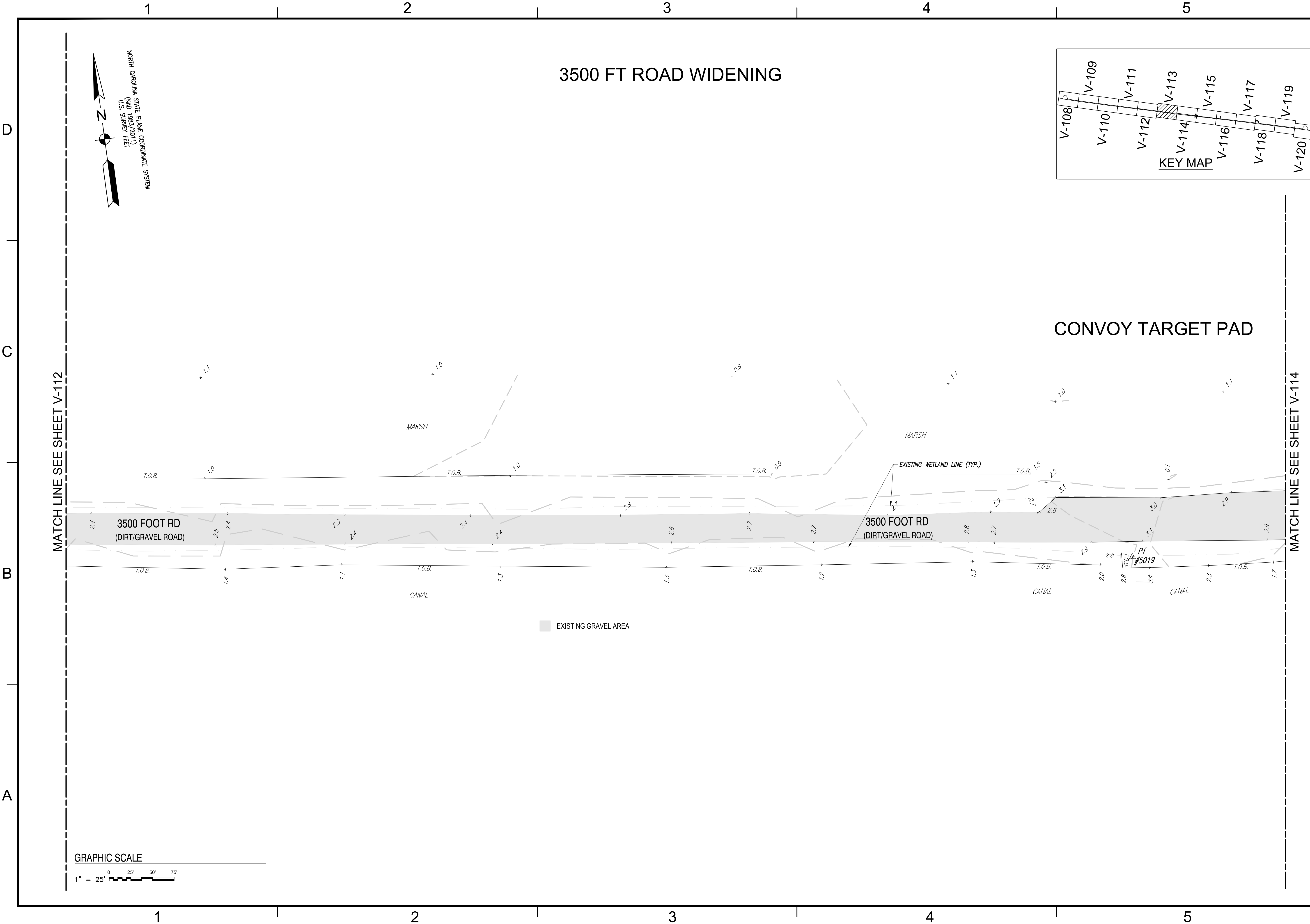
A B C D

A B C D

1 2 3 4 5

1 2 3 4 5

FILE NAME: K:\NC\clearcounty\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_cdr\_siteimprovements\B\_Design\DWG\SS\Sheet03\_SURV\2025\_1682190\_V-113.dwg LAYOUT NAME: V-113 PLOTTED: Tuesday, July 30, 2024 - 11:46am USER: howardbrewster



DATE		##
MARK		##
DESCRIPTION		##
SEAL		##
AE INFO		##
FOR COMMANDER NAVFAC		##
ACTIVITY		##
SATISFACTORY TO DATE		#####
DES	HRB	CHK CBM
PM/DM	H.BREWSTER III, P.E.	CBM
BRANCH MANAGER	CBM	CBM
CHIEF ENGINEER	HSDC	##
FIRE PROTECTION	##	##
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND		
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT		
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA		
NAVY DARE BOMBING RANGE		
DARE COUNTY, NORTH CAROLINA		
DARE COUNTY BOMBING RANGE		
SITE IMPROVEMENTS		
TOPOGRAPHIC SURVEY		
SCALE: AS NOTED		
PROJECT NO.: 1682190		
CONSTR. CONTR. NO. #####		
NAVFAC DRAWING NO. ##		
SHEET	#	OF #
V-113		
DRAWING REVISION: 14 SEP 2023		

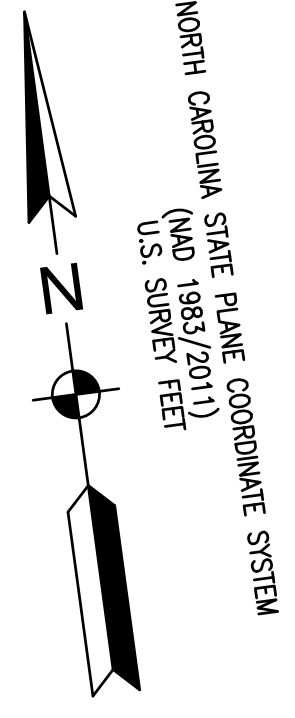
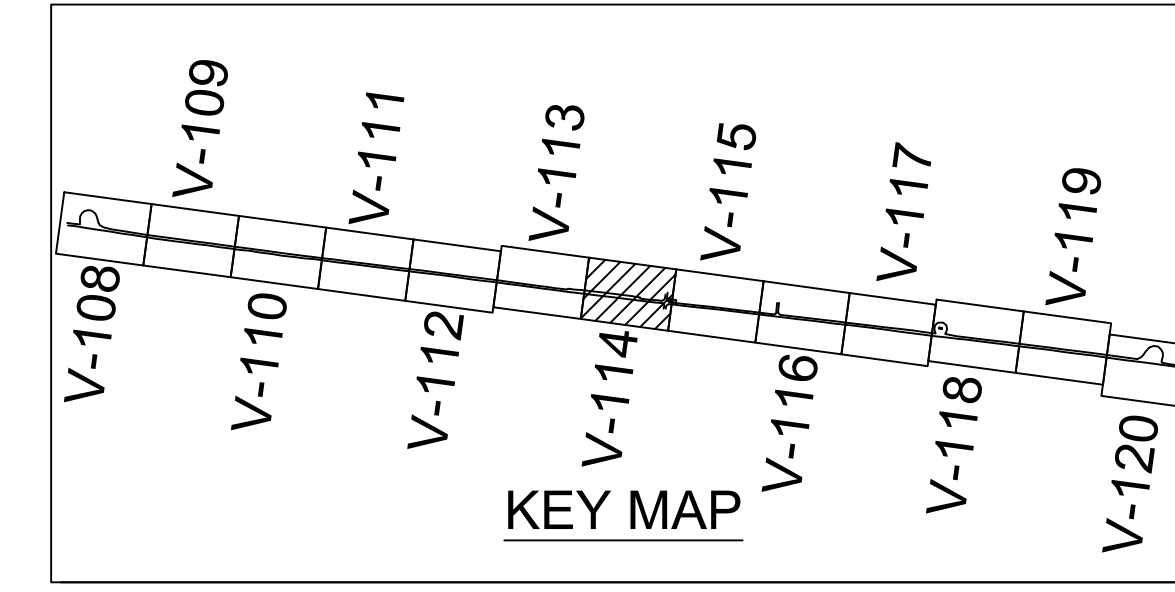
PRE-FINAL  
NOT FOR CONSTRUCTION



FILE NAME: K:\NC\laramount\Site\work\improvements\development\2021\_1682190\_cdr\_stemprovements\B\_Design\DWGS\Sheet03\_SURV\2025\_1682190\_V-114.dwg LAYOUT NAME: V-114 PLOTTED: Tuesday, July 30, 2024 - 11:46am USER: howardbrewster

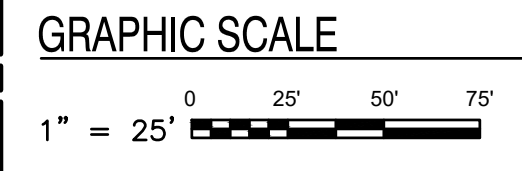
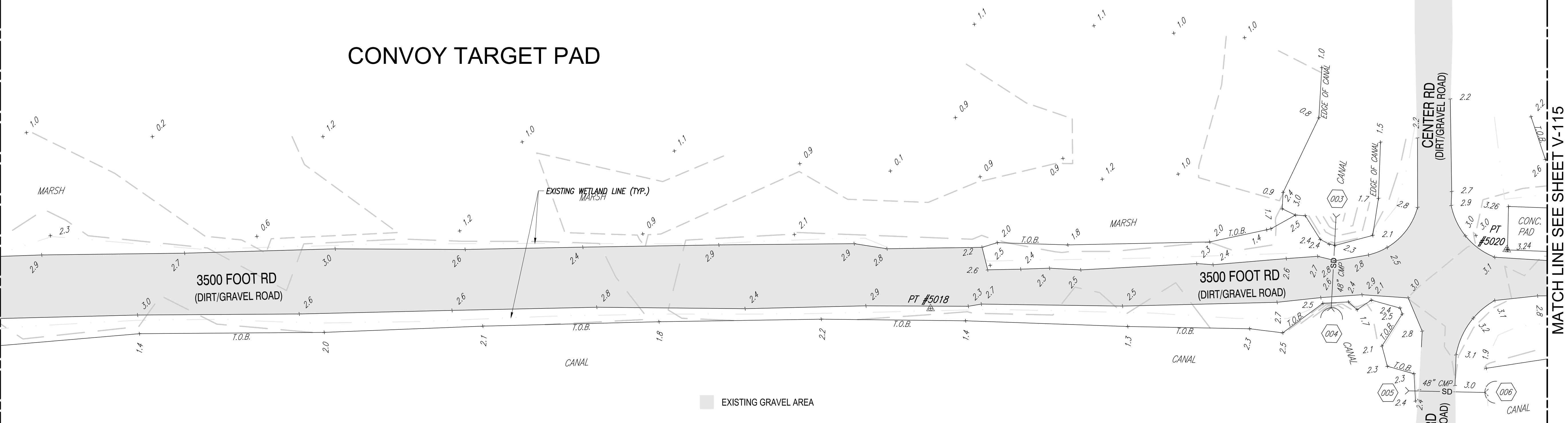
# 3500 FT ROAD WIDENING

## CONVOY TARGET PAD



MATCH LINE SEE SHEET V-113

MATCH LINE SEE SHEET V-115



MARK	DESCRIPTION	DATE



**PRELIMINARY NOT FOR CONSTRUCTION**

**BRIMFORTH ENGINEERS & SURVEYORS**

AE INTD

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PMDM H.BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA FEAD

**DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS**

DARE COUNTY, NORTH CAROLINA

TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

NAVFAC DRAWING NO. ##

SHEET # OF #

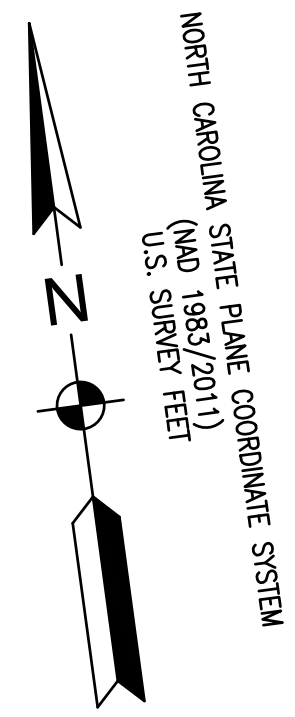
**V-114**

DRAWFORM REVISION: 14 SEP 2023





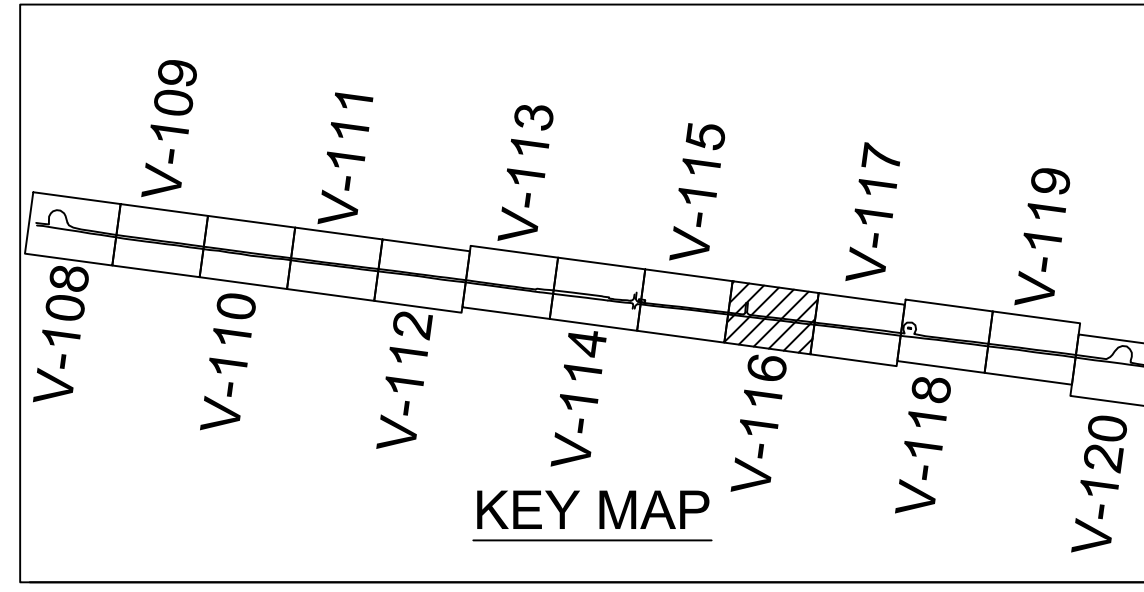
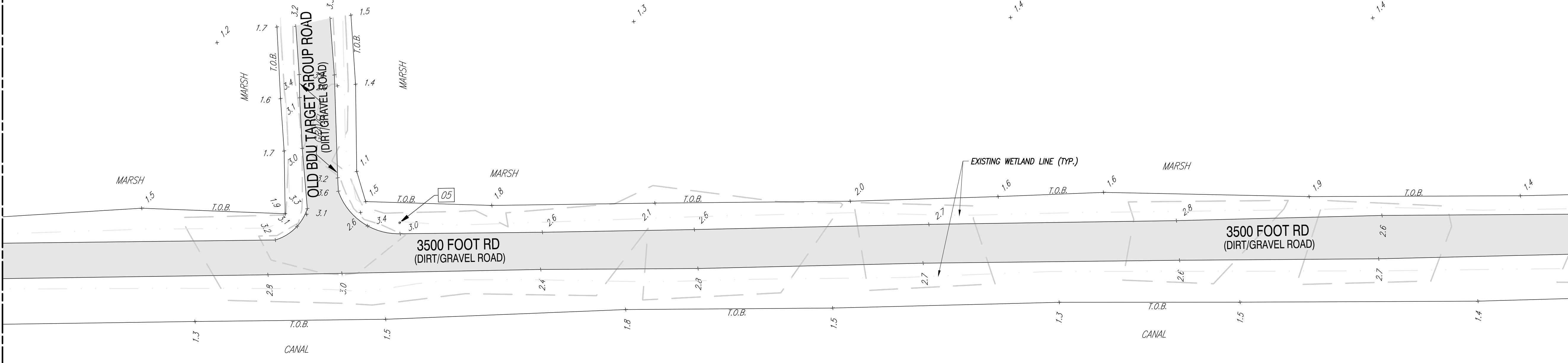
FILE NAME: K:\NC\darecounty\Site\work\siteimprovements\development\2021\_1682190\_001r\_sitemprovementsB\_Design\DWG\SSSheet03\_SURV\2025\_1682190\_V-116.dwg LAYOUT NAME: V-116 PLOTTED: Tuesday, July 30, 2024 - 11:40am USER: howardbrewster



# 3500 FT ROAD WIDENING

MATCH LINE SEE SHEET V-115

MATCH LINE SEE SHEET V-117



MARK	DESCRIPTION	#	#	DATE



PRE-FINAL  
NOT FOR CONSTRUCTION

**BRIMFORTH**  
ENGINEERS - SURVEYORS

AE INTD

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE: #####

DES: HRB | DRW: HRB | CHK: CBM

PMDM: H. BREWSTER III, P.E.

BRANCH MANAGER: CBM

CHIEF ENGINEER: HSDC

FIRE PROTECTION: ##

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA

NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA

**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**

TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO.: #####

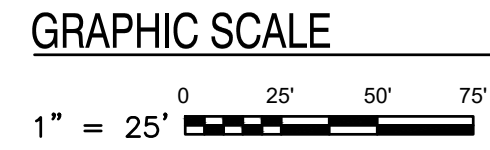
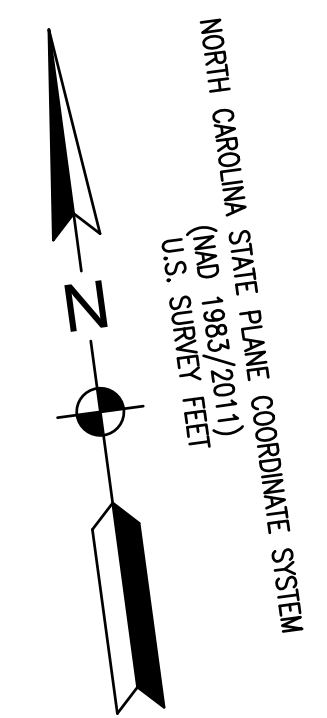
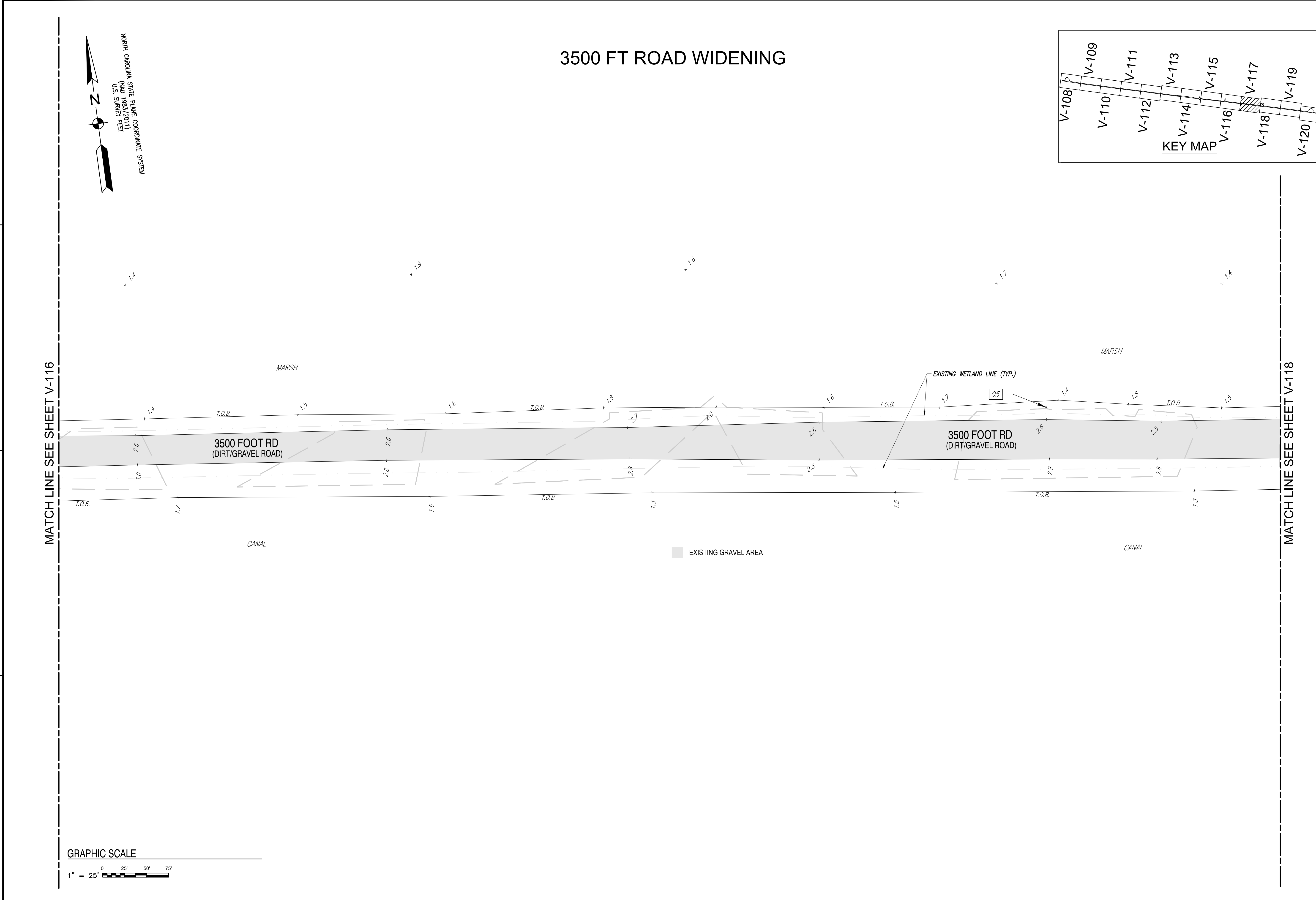
NAVFAC DRAWING NO.: ##

SHEET # OF #

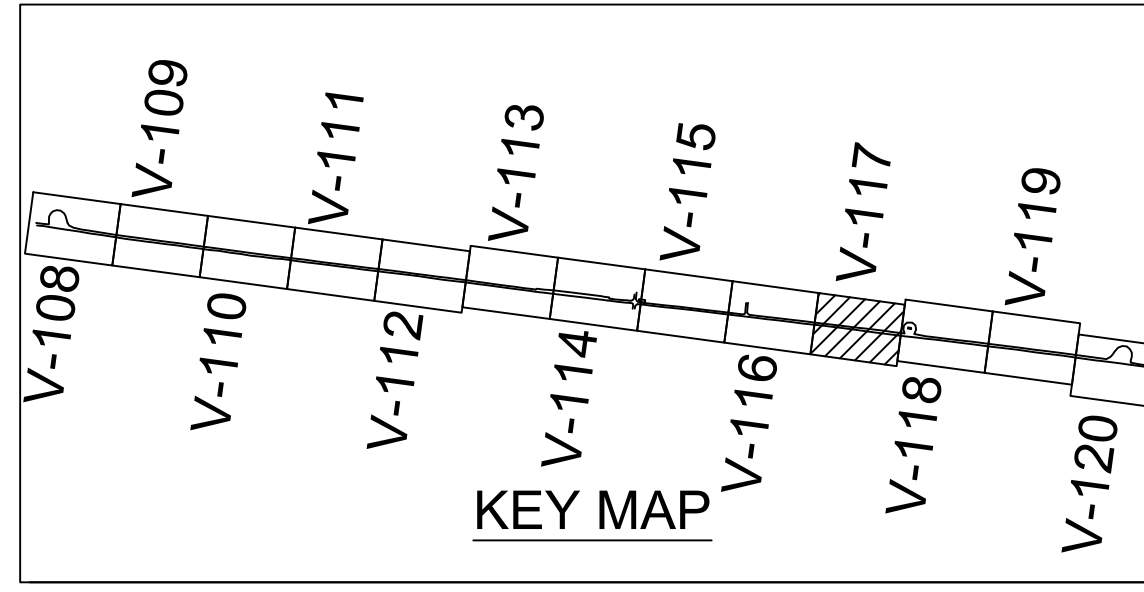
**V-116**

DRAWFORM REVISION: 14 SEP 2023

FILE NAME: K:\NC\claremont\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_02r\_siteimprovements\B\_Design\DWGS\Sheet03\_SURV\2025\_1682190\_V-117.dwg LAYOUT NAME: V-117 PLOTTED: Tuesday, July 30, 2024 - 11:41am USER: howardbrewster



### 3500 FT ROAD WIDENING



DATE	##	##	##	##
MARK	##	##	##	##
DESCRIPTION	##	##	##	##

**PRE-FINAL NOT FOR CONSTRUCTION**

**BRIMFORTH**  
ENGINEERS - SURVEYORS

APPROVED \_\_\_\_\_  
FOR COMMANDER NAVFAC

ACTIVITY \_\_\_\_\_

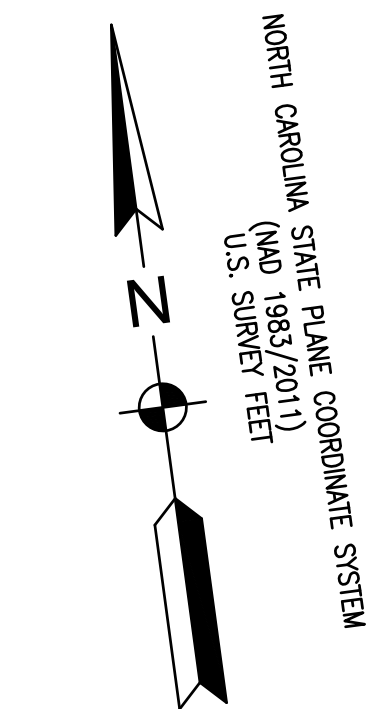
SATISFACTORY TO DATE #####

DES	HRB	DRW	HRB	CHK	CBM
PM/DM	H. BREWSTER III, P. E.				
BRANCH MANAGER	CBM				
CHIEF ENGINEER	HSDC				
FIRE PROTECTION	##				

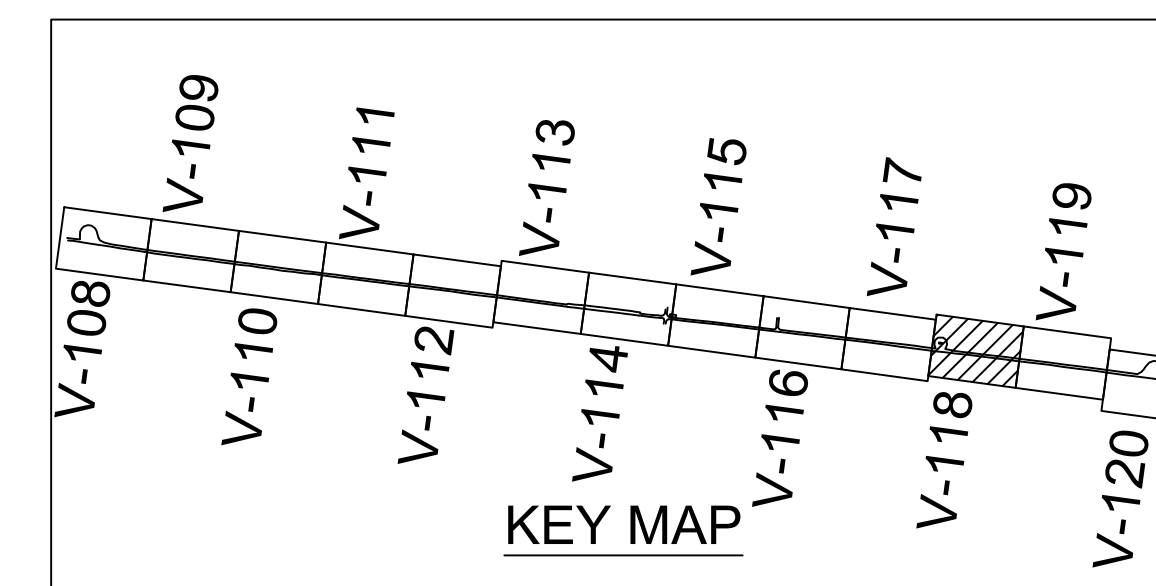
DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA FEAD  
NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**  
TOPOGRAPHIC SURVEY

SCALE: AS NOTED  
PROJECT NO.: 1682190  
CONSTR. CONTR. NO.: #####  
NAVFAC DRAWING NO.: ##  
SHEET # OF #  
**V-117**  
DRAWING REVISION: 14 SEP 2023

FILE NAME: K:\NC\clearcounty\SiteWork\SiteImprovements\Development\2021\_1682190\_cdr\_stemprovements\B\_Design\DWGS\Sheet03\_SURV\2025\_1682190\_V-118.dwg LAYOUT NAME: V-118 PLOTTED: Tuesday, July 30, 2024 - 11:41am USER: howardbrewster

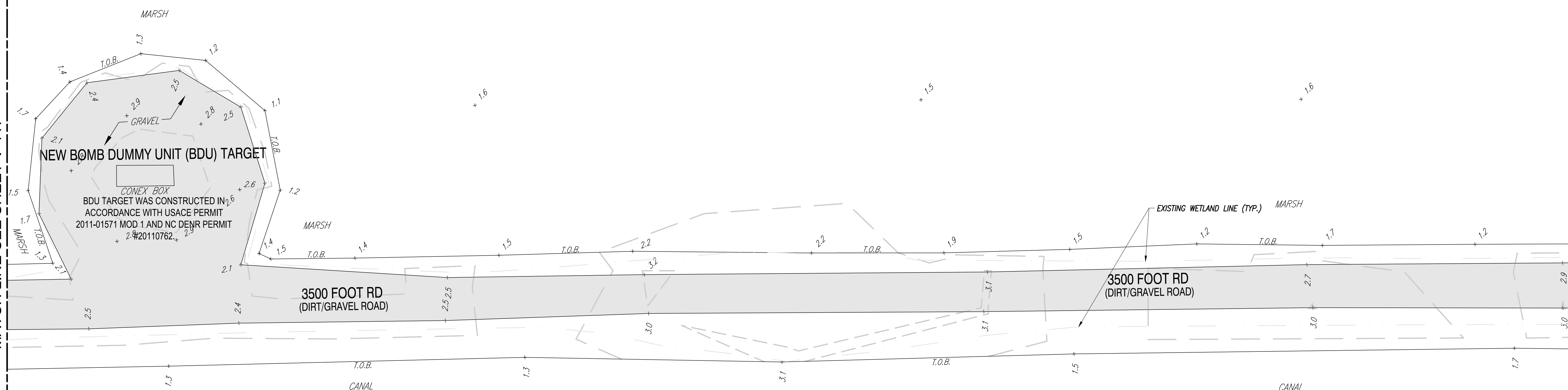


# 3500 FT ROAD WIDENING

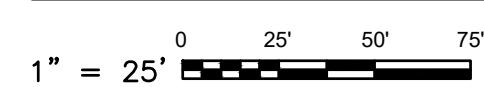


MATCH LINE SEE SHEET V-117

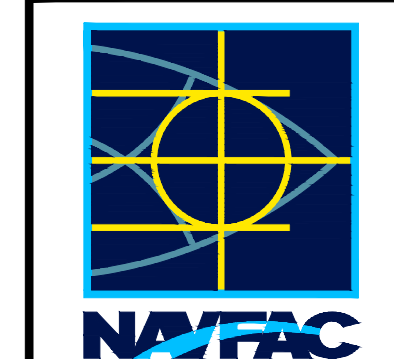
MATCH LINE SEE SHEET V-119



GRAPHIC SCALE



MARK	DESCRIPTION	DATE



PRE-FINAL NOT FOR CONSTRUCTION

**BREWSTER**  
ENGINEERS + SURVEYORS

AE INTD

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE #####

DES HRB | DRW HRB | CHK CBM

PM DM H. BREWSTER III, P.E.

BRANCH MANAGER CBM

CHIEF ENGINEER HSDC

FIRE PROTECTION #

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT

NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA

NAVAL OCEANA FEAD

NAVY DARE BOMBING RANGE

DARE COUNTY, NORTH CAROLINA

**DARE COUNTY BOMBING RANGE**

**SITE IMPROVEMENTS**

TOPOGRAPHIC SURVEY

SCALE: AS NOTED

PROJECT NO.: 1682190

CONSTR. CONTR. NO. #####

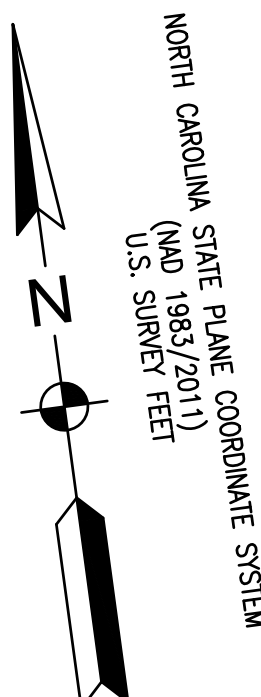
NAVFAC DRAWING NO. ##

SHEET # OF #

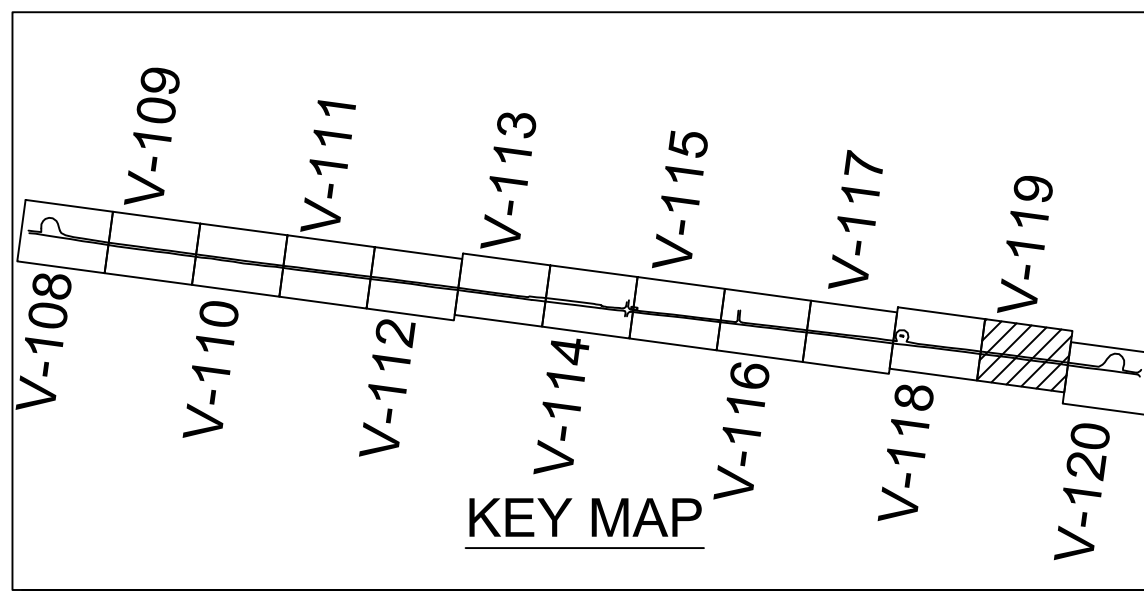
**V-118**

DRAWFORM REVISION: 14 SEP 2023

FILE NAME: K:\NC\areacounty\SiteWork\SiteImprovements\SiteDevelopment\2021\_1682190\_dcbt\_siteimprovements\B\_Design\DWG\Sheet03\_SURV\2025\_1682190\_1419.dwg LAYOUT NAME: V-119 PLOTTED: Tuesday, July 30, 2025, 11:41am USER: howard.brewster

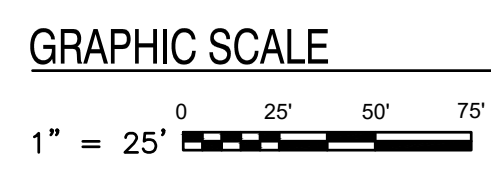


# 3500 FT ROAD WIDENING



MATCH LINE SEE SHEET V-118

MATCH LINE SEE SHEET V-120



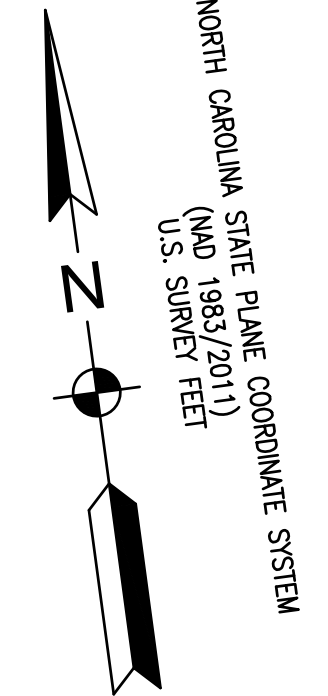
DATE	##	##	##
MARK	##	##	##
DESCRIPTION	##	##	##
<b>FINAL</b> NOT FOR CONSTRUCTION			
<b>BANFORTH</b> ENGINEERS & SURVEYORS			
APPROVED	A/E INFO		
FOR COMMANDER NAVFAC	ACTIVITY		
SATISFACTORY TO DATE	#####		
DES	HRB	DRAW	HRB
CHK	CBM		
PM/DM	H. BREWSTER III, P.E.		
BRANCH MANAGER	CBM		
CHIEF ENGINEER	HSDC		
FIRE PROTECTION	##		
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND		
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT	NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA		
PWD OCEANA LEAD	NAVAL DARE BOMBING RANGE		
NAVAL DARE BOMBING RANGE	DARE COUNTY, NORTH CAROLINA		
<b>DARE COUNTY BOMBING RANGE</b>			
<b>SITE IMPROVEMENTS</b>			
TOPOGRAPHIC SURVEY			
SCALE:	AS NOTED		
PROJECT NO.	1682190		
CONSTR. CONTR. NO.	#####		
NAVFAC DRAWING NO.	##		
SHEET	#	OF	#
<b>V-119</b>			
DRAWFORM REVISION: 14 SEP 2023			

FILE NAME: K:\NC\areacounty\Sisework\SiteImprovements\SiteDevelopment\2021\_1682190\_dcbt\_sitemprovementsB\_Design\DWG\Sheet03\_SURV\2025\_1682190\_14720.dwg LAYOUT NAME: V-120 PLOTTED: Tuesday, July 30, 2024 - 11:41am USER: howard.brewster

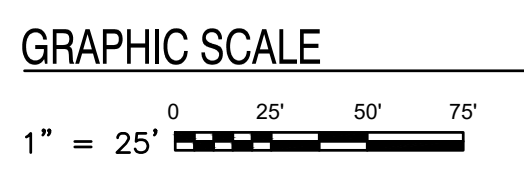
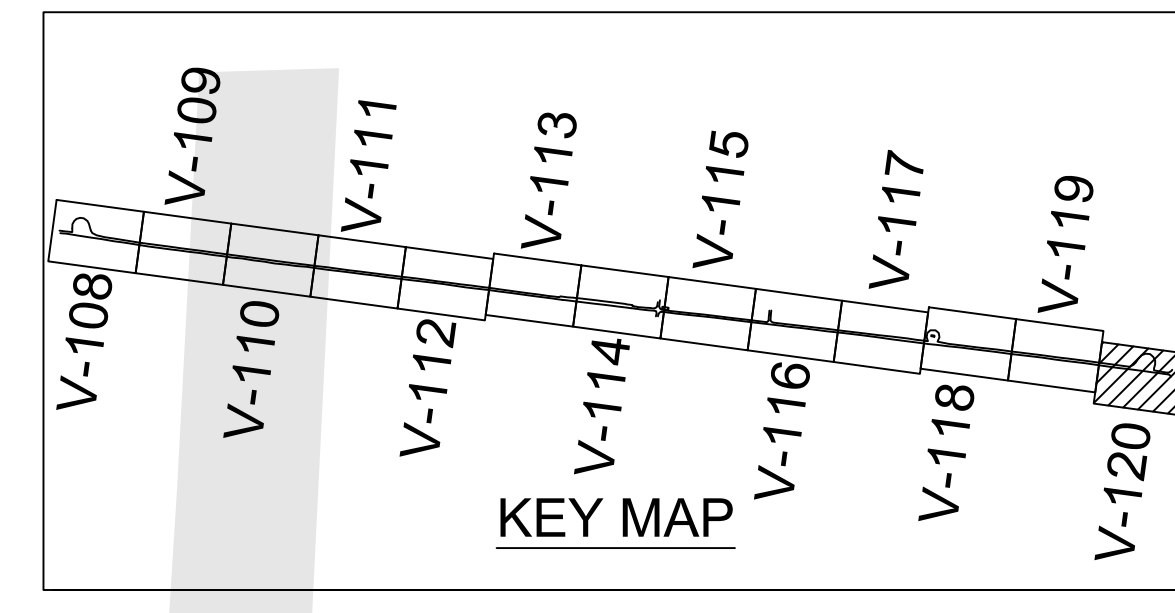
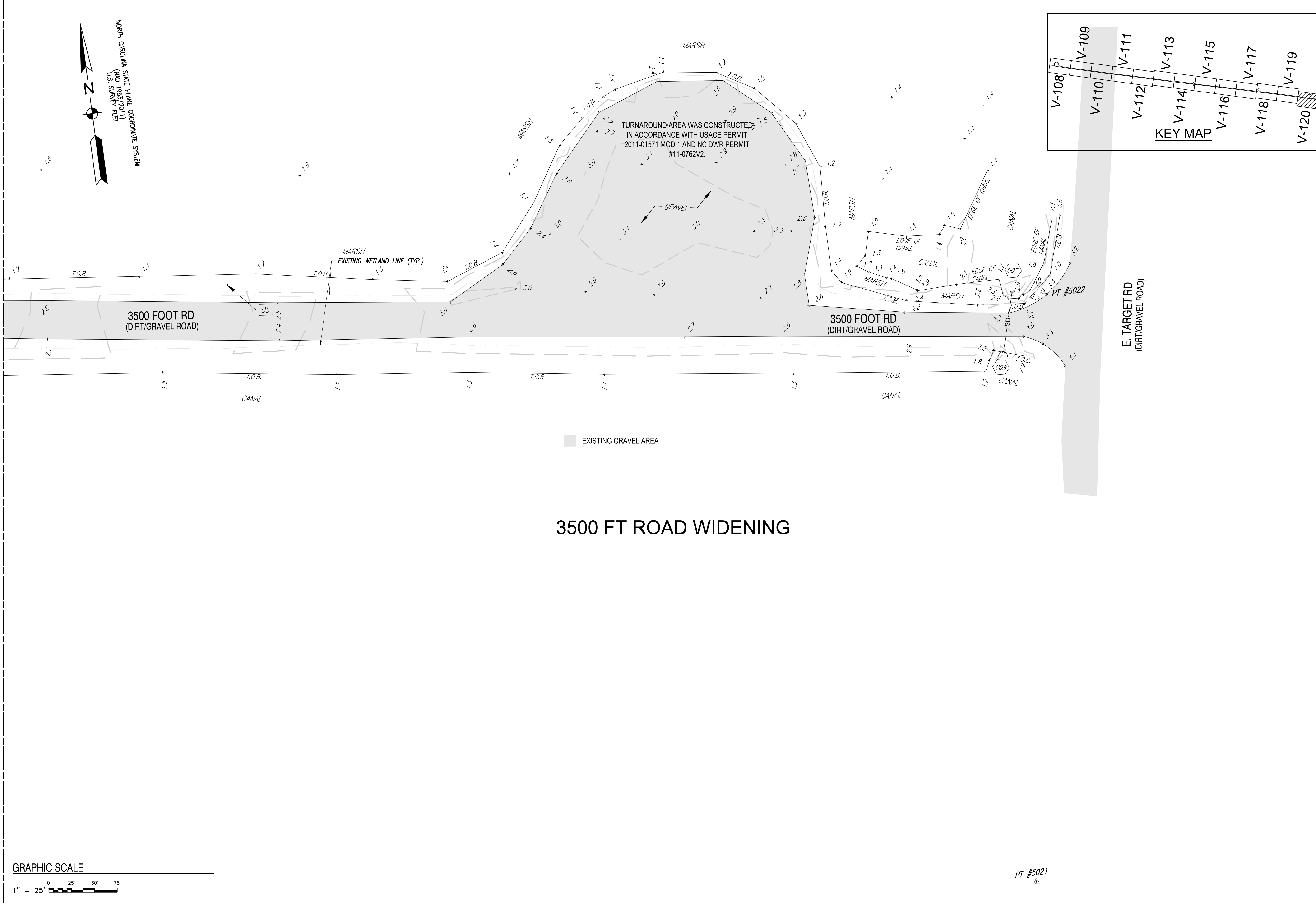
1 2 3 4 5

D  
C  
B  
A

1 2 3 4 5



MATCH LINE SEE SHEET V-119



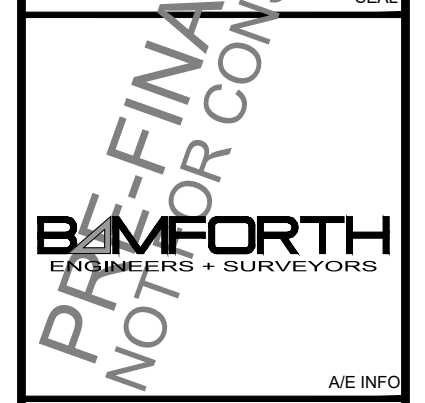
### 3500 FT ROAD WIDENING

EXISTING GRAVEL AREA

MARK	DESCRIPTION	DATE



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**



APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	#####
DES	HRB   DRW   HRB   CHK   CBM
PM/DM	H.BREWSTER III, P.E.
BRANCH MANAGER	CBM
CHIEF ENGINEER	HSDC
FIRE PROTECTION	#

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-MIDLANT  
NAVAL OCEANAHEAD  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
SITE IMPROVEMENTS  
TOPOGRAPHIC SURVEY

SCALE:	AS NOTED
PROJECT NO.	1682190
CONSTR. CONTR. NO.	#####
NAVFAC DRAWING NO.	##
SHEET	# OF #
V-120	

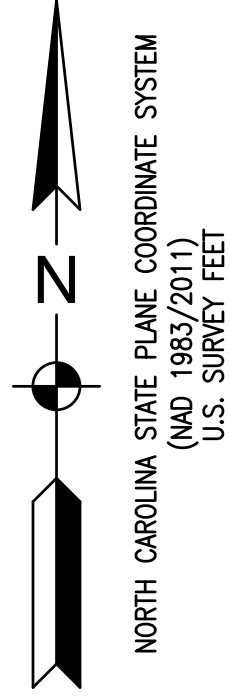
1

2

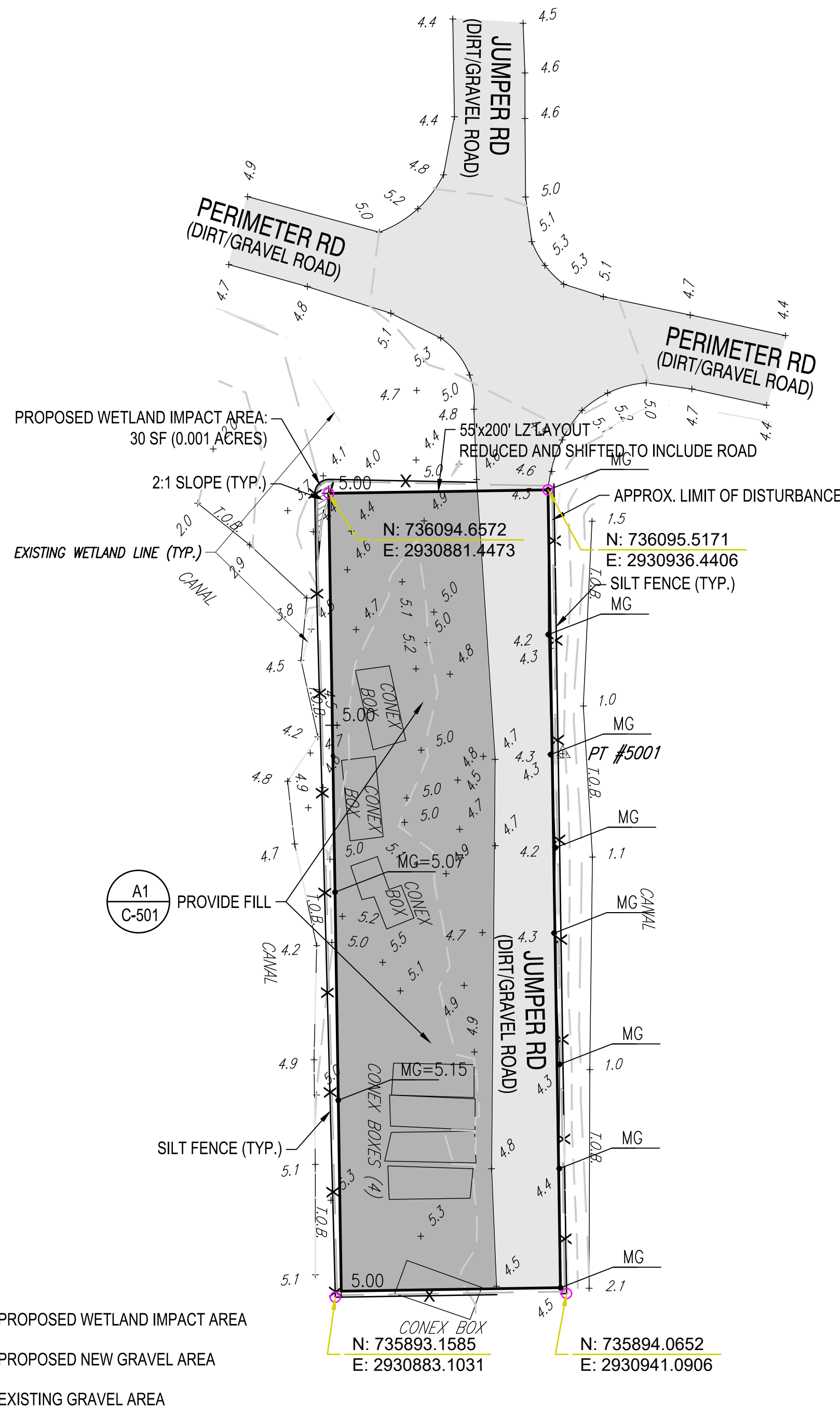
3

4

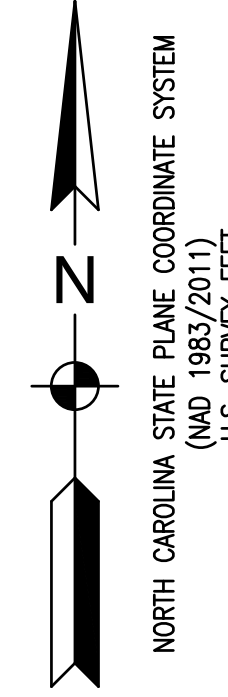
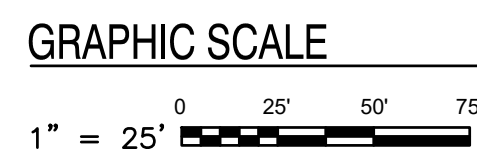
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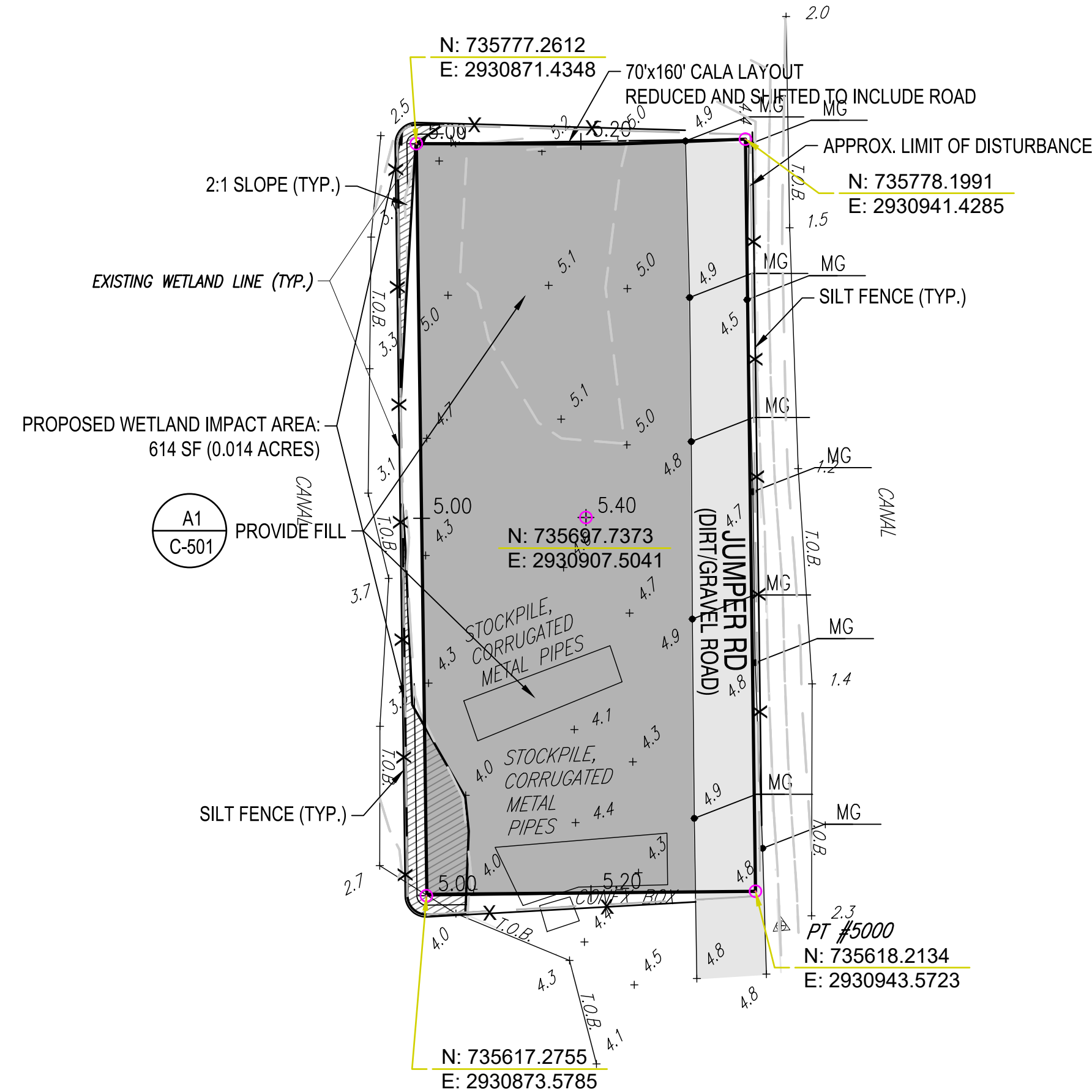
### LANDING ZONE (LZ)



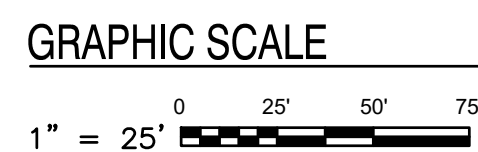
- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### COMBAT AIRCRAFT LOADING AREA (CALA)



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

- A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)
- B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

- 1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1
- 2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



**PRE-FINAL**  
NOT FOR CONSTRUCTION

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES HRB   DRW HRB   CHK CBM
PM/DM H.BREWSTER III, P.E.
BRANCH MANAGER CBM
CHIEF ENGINEER HSDC
FIRE PROTECTION #

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 PWD OCEANA FEAD  
 NAVY DARE BOMBING RANGE  
 DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE**  
**SITE IMPROVEMENTS**  
 LZ AND CALA PAD IMPROVEMENTS

### KEY PLAN

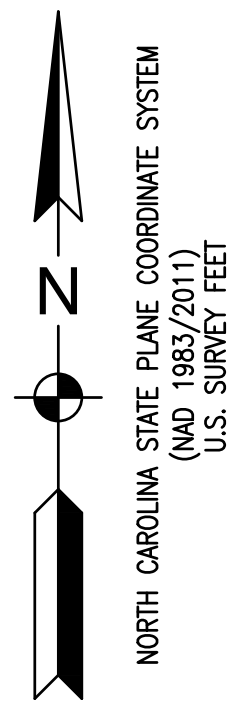
### GRAPHIC SCALE



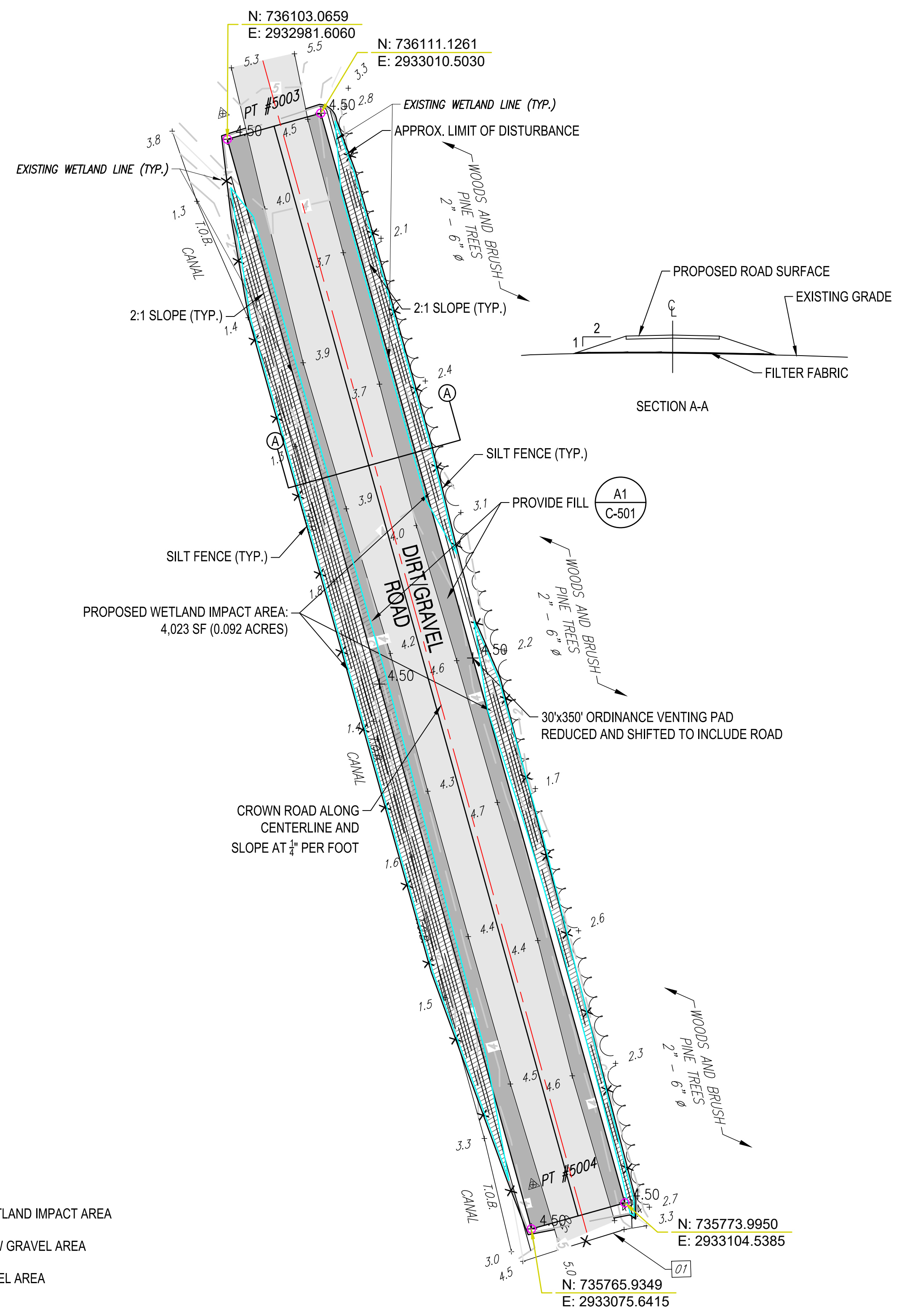
SCALE: AS NOTED
PROJECT NO.: 1682190
CONSTR. CONTR. NO. #####
NAVFAC DRAWING NO. ##
SHEET # OF #
<b>C-103</b>

DRAWFORM REVISION: 14 SEP 2023

FILE NAME: K:\C:\darcocopy\Stewart\blimpimprovements\blimpimprovements\2021\_1682190\_dbr\_blimpimprovements\021\_1682190\_dbr\_blimpimprovements\021\_1682190.dwg LAYOUT NAME: C-103 PLOTTED: Tuesday, July 30, 2024 - 11:42am USER: howard.brewster



# ORDNANCE VENTING PAD



## GENERAL SHEET NOTES

- A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)
- B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

## KEYNOTES

- 1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1
- 2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



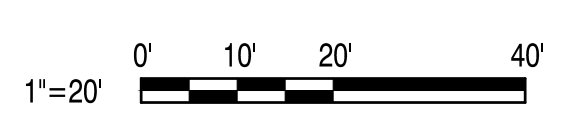
**PRE-FINAL  
NOT FOR CONSTRUCTION**

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES: HRB   DRW: HRB   CHK: CBM
PM/DM: H. BREWSTER III, P.E.
BRANCH MANAGER: CBM
CHIEF ENGINEER: HSDC
FIRE PROTECTION: ##

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT  
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
NAVAL OCEANA FEAD  
NAVY DARE BOMBING RANGE  
DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE  
SITE IMPROVEMENTS**  
ORDNANCE VENTING PAD IMPROVEMENTS

## KEY PLAN

## GRAPHIC SCALE



SCALE: AS NOTED
EPROJECT NO.: 1682190
CONSTR. CONTR. NO. #####
NAVFAC DRAWING NO. ##
SHEET # OF #
<b>C-104</b>
DRAWFORM REVISION: 14 SEP 2023

FILE NAME: K:\NC\Drawings\SiteWork\SiteImprovements\1682190\_01\_01\_01\Drawings\1682190-01-01-01-01.dwg LAYOUT NAME: C-104\_PLOTTEED Tuesday, July 30, 2024 11:42am USER: howard.brewster







1

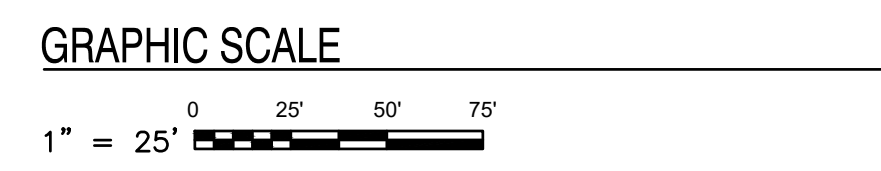
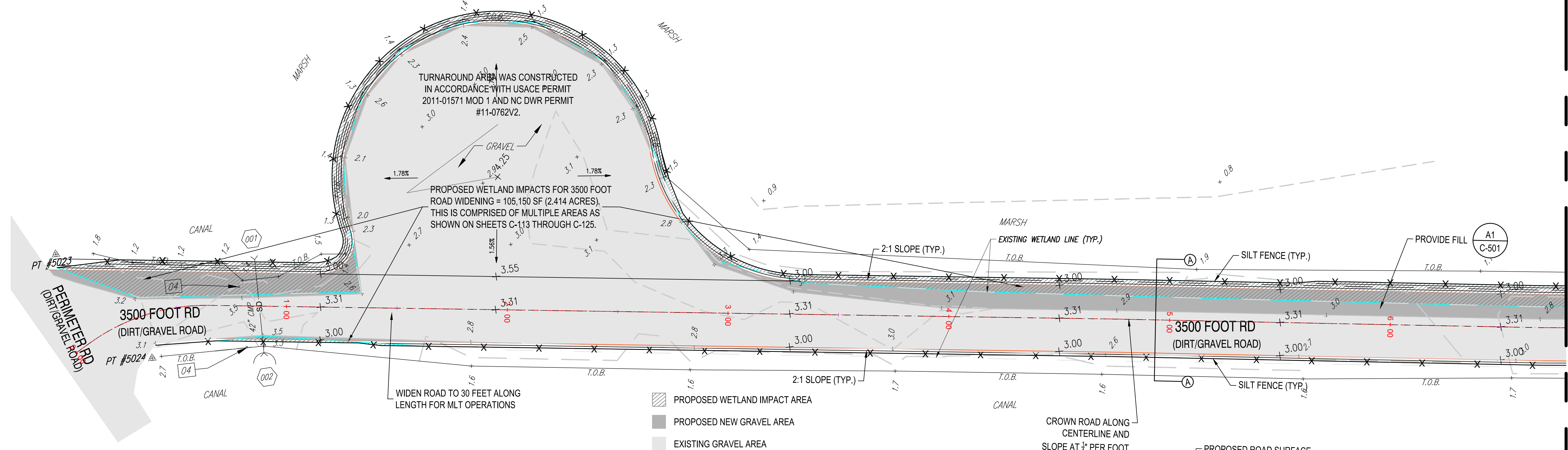
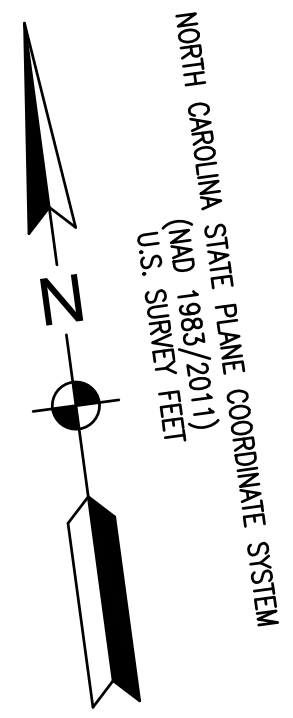
2

3

4

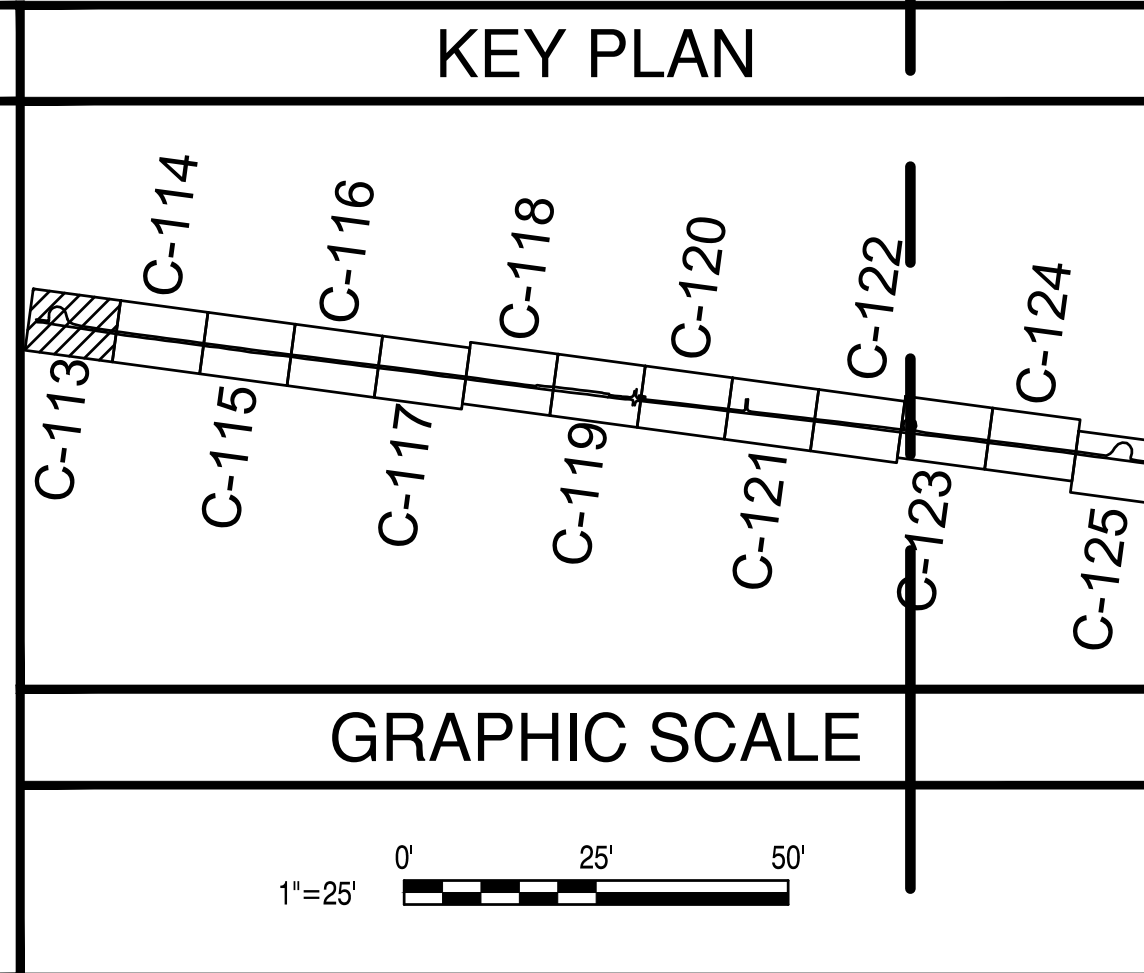
5

# 3500 FT ROAD WIDENING



GENERAL SHEET NOTES	
A.	THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)
B.	IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

KEYNOTES	
1.	THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6   5.1
2.	IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



DATE	
MARK DESCRIPTION	
<b>PRE-FINAL</b> NOT FOR CONSTRUCTION	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	HRB   DRW   HRB   CHK   CBM
PM/DM	H. BREWSTER III, P. E.
BRANCH MANAGER	CBM
CHIEF ENGINEER	HSDC
FIRE PROTECTION	#
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE</b> <b>SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (1 OF 13)	
SCALE:	AS NOTED
PROJECT NO.:	1682190
CONSTR. CONTR. NO.:	#####
NAVFAC DRAWING NO.:	##
SHEET #	OF #
<b>C-113</b>	
DRAWFORM REVISION: 14 SEP 2023	

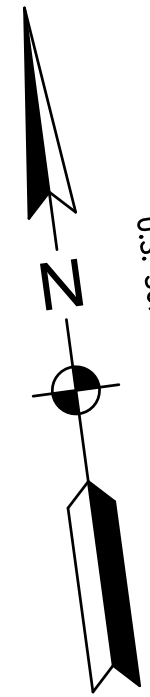
FILE NAME: I:\NC\darecounty\Stewart\slimprowm\slimprowm\2021\_1682190\_dare\_county\_bombing\_range\2021\_1682190\_dare\_county\_bombing\_range\1682190.dwg  
 LAYOUT NAME: C-113  
 PLOTTED: Tuesday, July 30, 2024 11:45am  
 USER: howard.brewster



FILE NAME: K:\C:\darcoc\proj\Stewart\blimpimprovements\blimpimprovements\2021\_1682190\_dbr\_blimpimprovements\2021\_1682190\_dbr\_blimpimprovements\2021\_1682190.dwg LAYOUT NAME: C-115 PLOTTED: Tuesday, July 30, 2024 11:44am USER: howard.brewster

# 3500 FT ROAD WIDENING

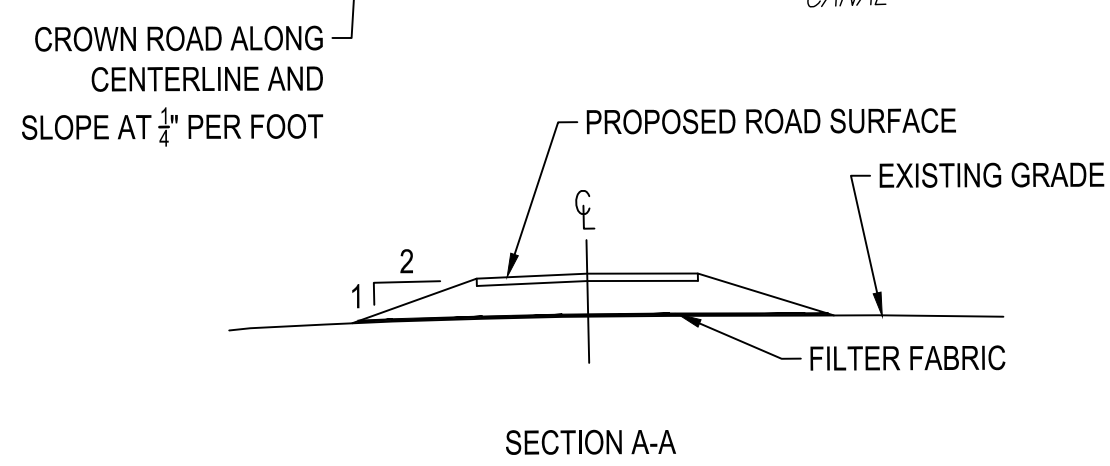
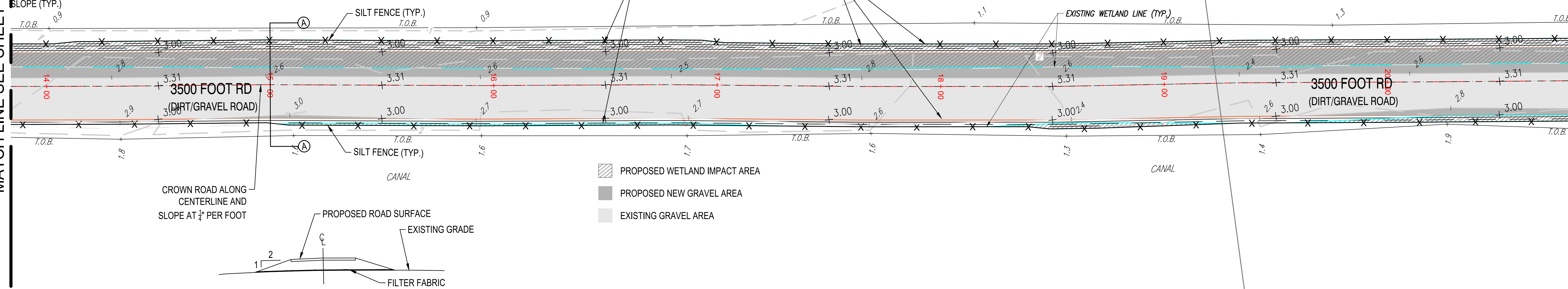
NORTH CAROLINA STATE PLANE COORDINATE SYSTEM  
(NAD 1983/2011)  
U.S. SURVEY FEET



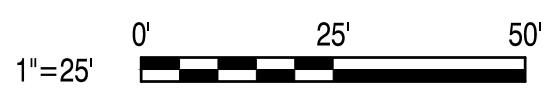
PROPOSED WETLAND IMPACTS FOR 3500 FOOT ROAD WIDENING = 105,150 SF (2.414 ACRES). THIS IS COMPRISED OF MULTIPLE AREAS AS SHOWN ON SHEETS C-113 THROUGH C-125.

MATCH LINE SEE SHEET V-114

MATCH LINE SEE SHEET V-116



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

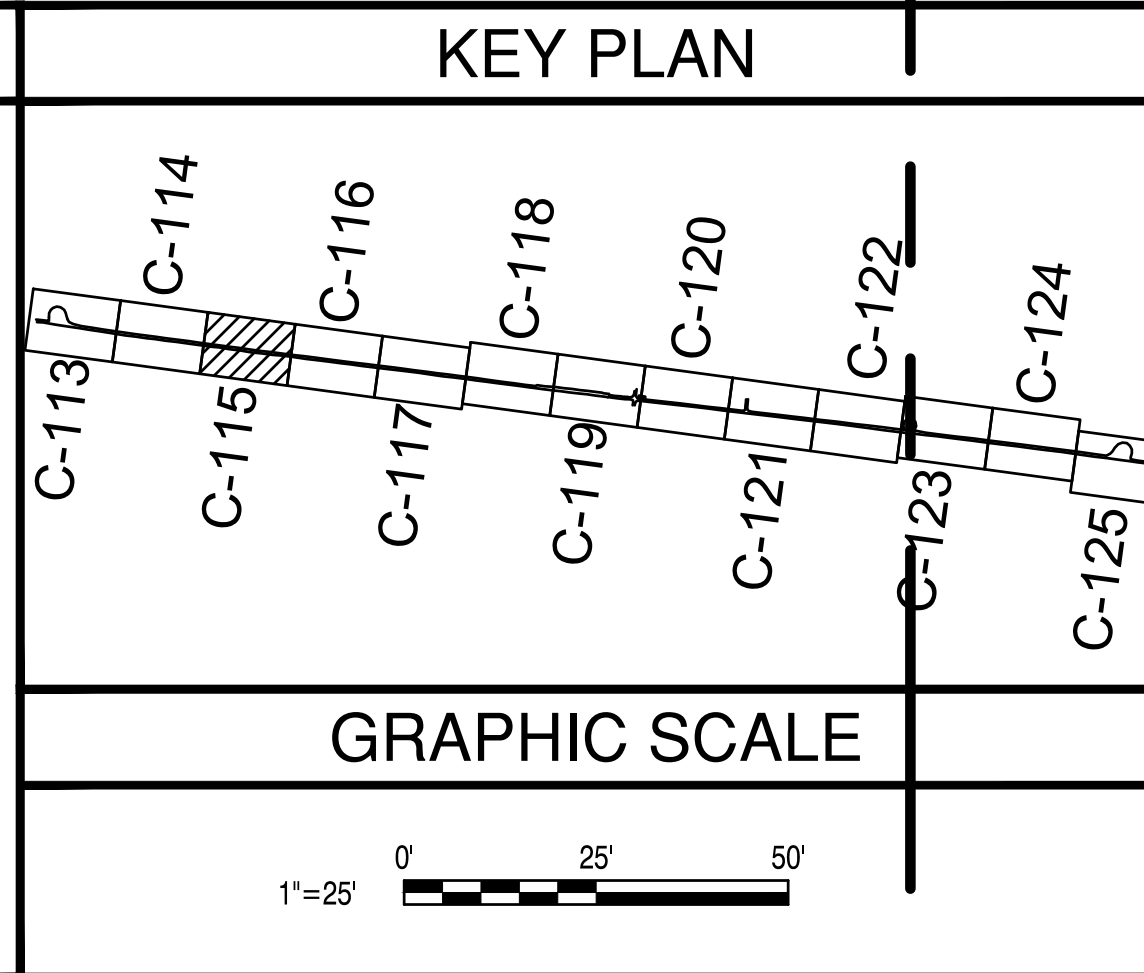
A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)

B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

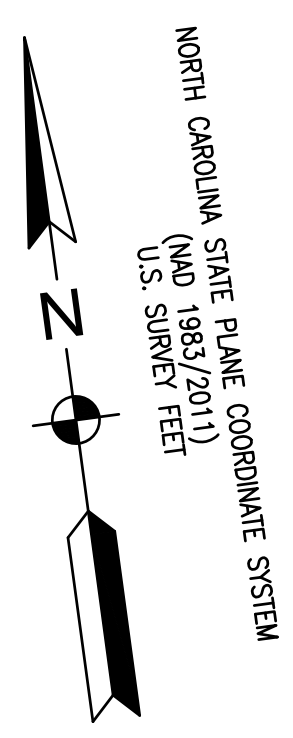
1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1

2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



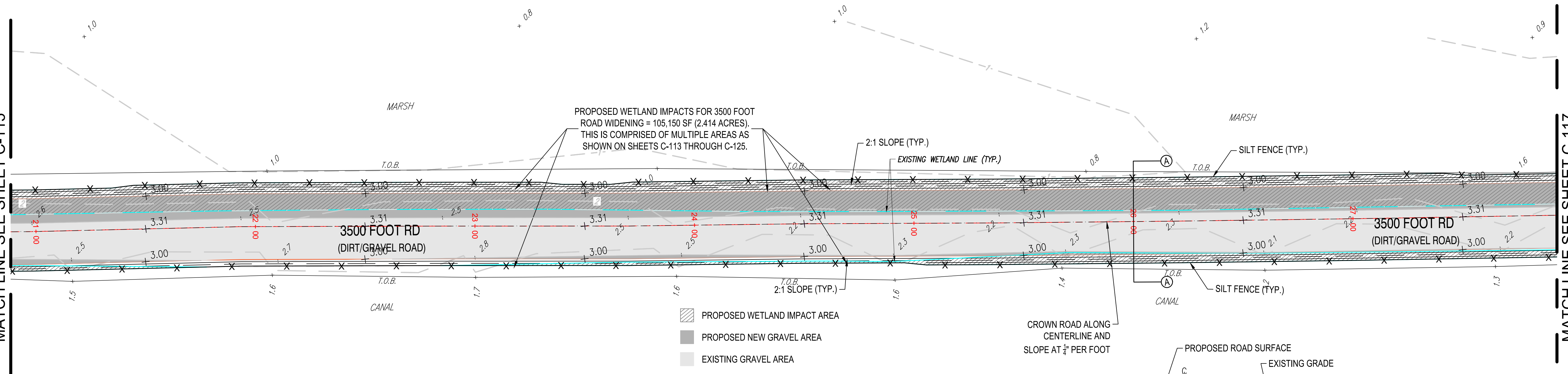
	<b>PRE-FINAL NOT FOR CONSTRUCTION</b>						
APPROVED							
FOR COMMANDER NAVFAC							
ACTIVITY							
SATISFACTORY TO DATE							
DES	HRB	[drw]	HRB	[chk]	CBM		
PM/D	H. BREWSTER III, P.E.						
BRANCH MANAGER	CBM						
CHIEF ENGINEER	HSDC						
FIRE PROTECTION	#						
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND	DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS						
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT	3500 FOOT ROAD WIDENING IMPROVEMENTS (3 OF 13)						
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA							
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA							
NAVY DARE BOMBING RANGE							
DARE COUNTY, NORTH CAROLINA							
DEPARTMENT OF THE NAVY							
SCALE:	AS NOTED						
PROJECT NO.:	1682190						
CONSTR. CONTR. NO.:	#####						
NAVFAC DRAWING NO.:	##						
SHEET #	#	OF	#				
<b>C-115</b>							
DRAWFORM REVISION: 14 SEP 2023							

# 3500 FT ROAD WIDENING

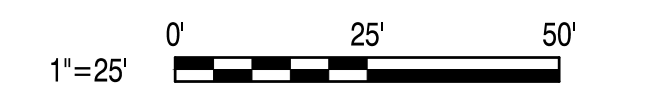
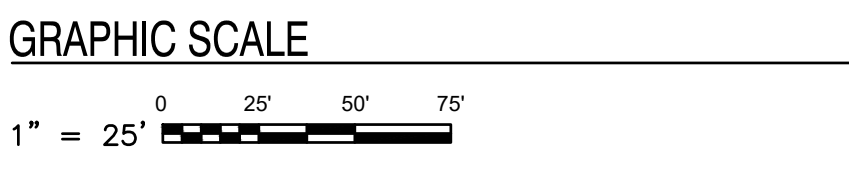
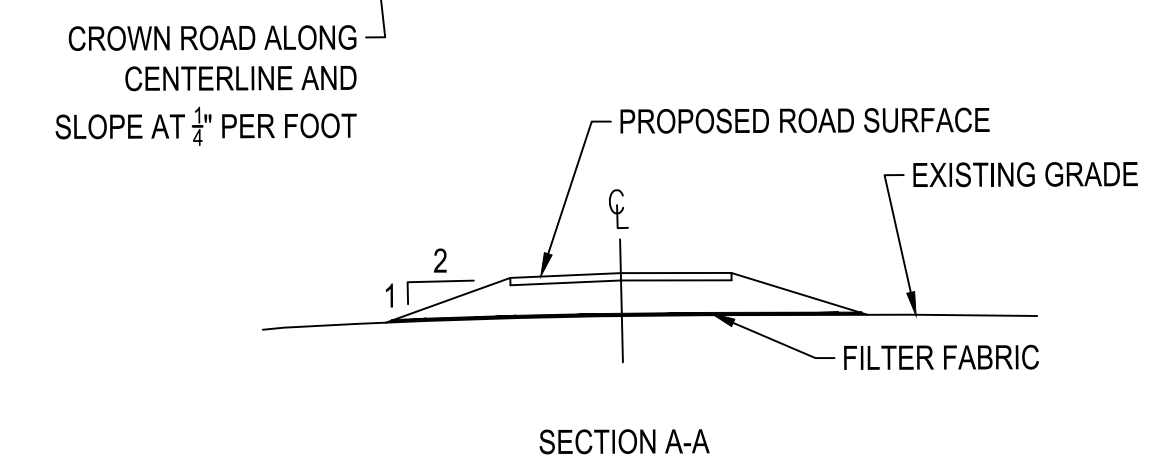


MATCH LINE SEE SHEET C-115

MATCH LINE SEE SHEET C-117



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

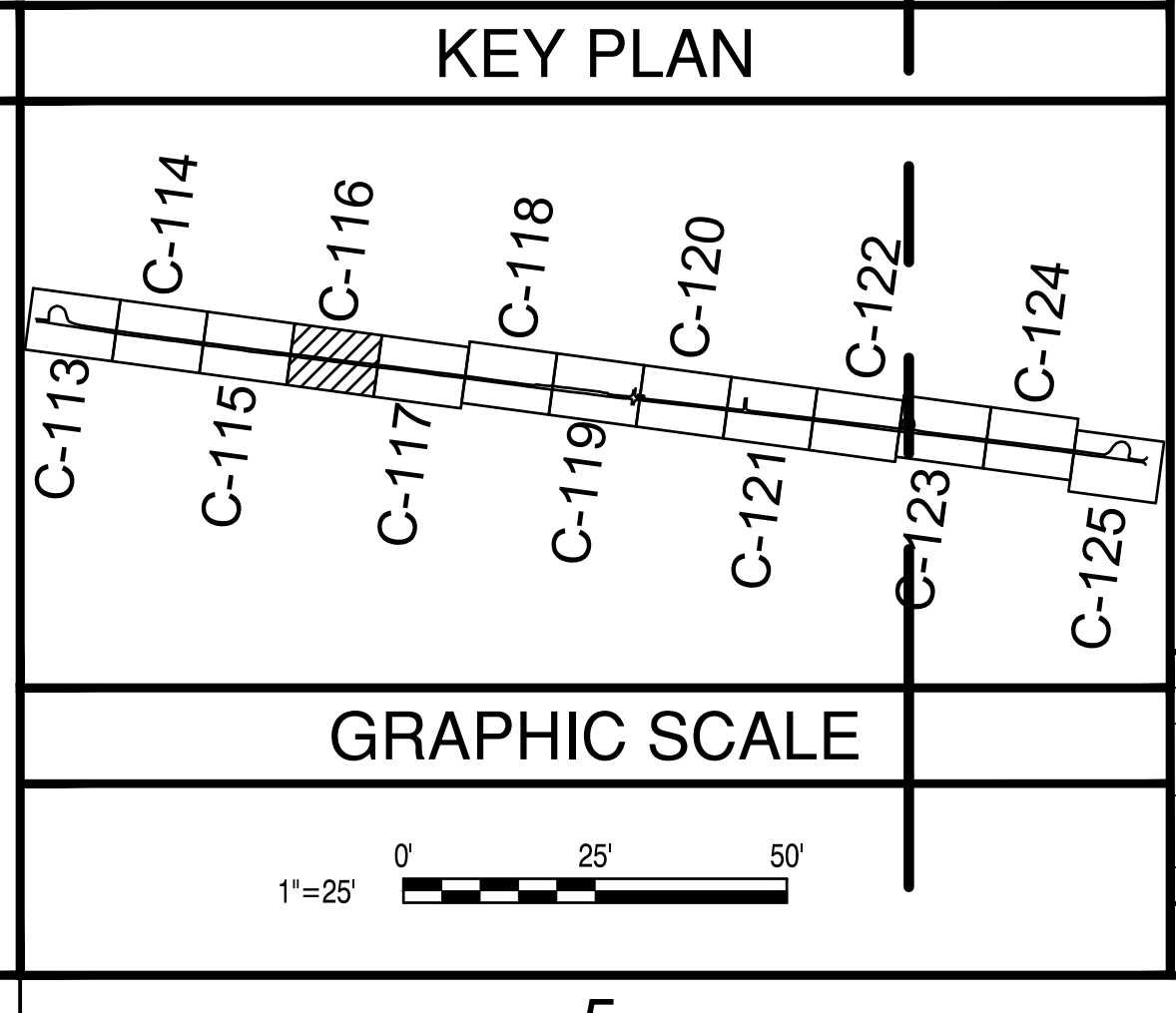
A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)

B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1

2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



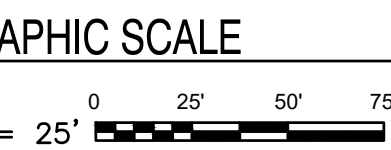
	DATE
	MARK DESCRIPTION
PRE-FINAL NOT FOR CONSTRUCTION	
APPROVED _____ FOR COMMANDER NAVFAC ACTIVITY _____	
SATISFACTORY TO DATE DES HRB   DRW HRB   CHK CBM PMDM H.BREWSTER III, P.E. BRANCH MANAGER CBM CHIEF ENGINEER HSDC FIRE PROTECTION #	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (4 OF 13)	
SCALE: AS NOTED EPROJECT NO.: 1682190 CONSTR. CONTR. NO. #####-##-#### NAVFAC DRAWING NO. ## SHEET # OF # <b>C-116</b> DRAWFORM REVISION: 14 SEP 2023	

FILE NAME: K:\NC\darecounty\Stewart\blimp\improvements\blimp\improvements\1682190\_dare\_bombing\_range\Drawings\DWG\Sheet\_C-116.dwg LAYOUT NAME: C-117 PLOTTED: Tuesday, July 30, 2024 11:44am USER: howard.brewster

FILE NAME: I:\NC\Drawings\Stations\Improvements\1682190\_1682190\_01.dwg; USER: hward; DATE: 2024-07-30 11:45am; PROJECT: 1682190; SHEET: C-117

# 3500 FT ROAD WIDENING

NORTH CAROLINA STATE PLANE COORDINATE SYSTEM  
(NAD 1983/2011)  
U.S. SURVEY FEET

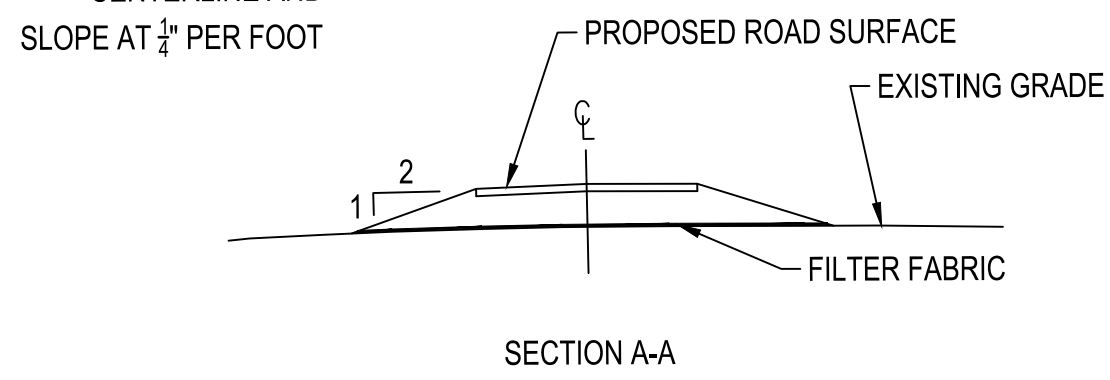


MATCH LINE SEE SHEET C-116

MATCH LINE SEE SHEET C-118

PROPOSED WETLAND IMPACTS FOR 3500 FOOT ROAD WIDENING = 105,150 SF (2.414 ACRES). THIS IS COMPRISED OF MULTIPLE AREAS AS SHOWN ON SHEETS C-113 THROUGH C-125.

- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



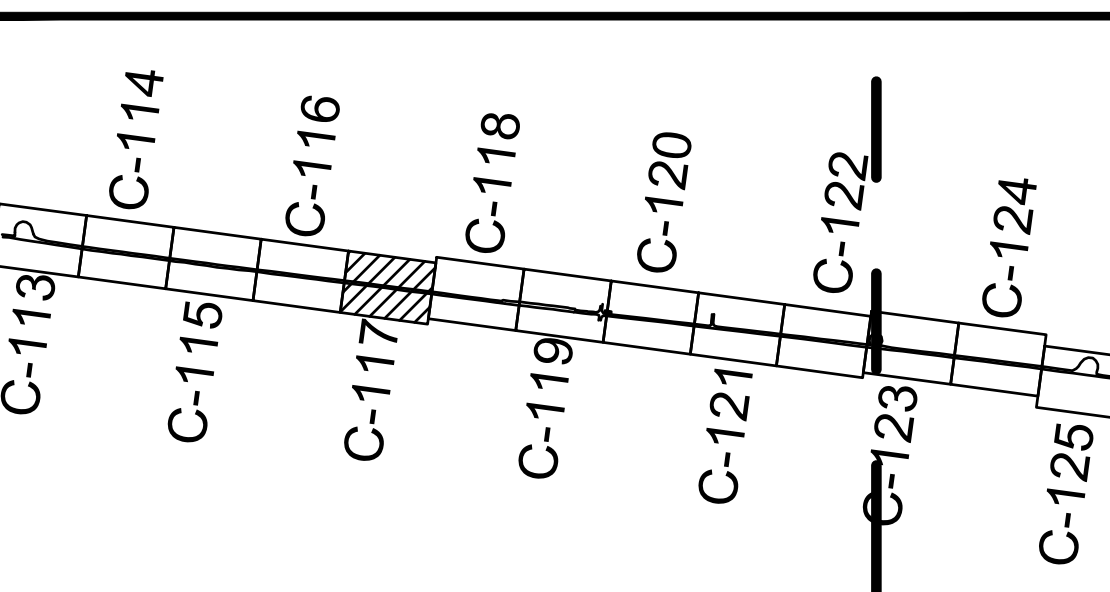
### GENERAL SHEET NOTES

- A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)
- B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

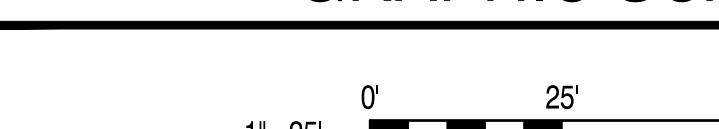
### KEYNOTES

- 1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1
- 2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEY PLAN



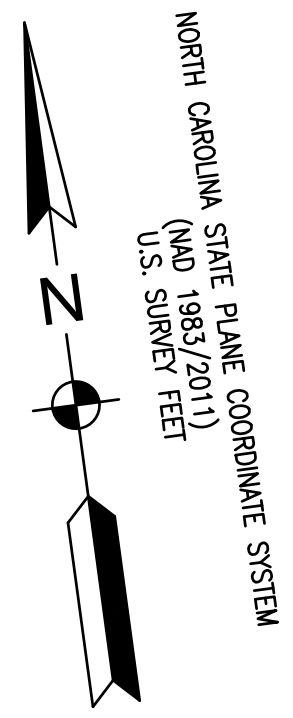
### GRAPHIC SCALE



	DATE
	MARK DESCRIPTION
PRE-FINAL NOT FOR CONSTRUCTION	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES: HRB	CHK: CBM
PMDM: H. BREWSTER III, P.E.	
BRANCH MANAGER: CBM	
CHIEF ENGINEER: HSDC	
FIRE PROTECTION: #	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (5 OF 13)	
SCALE: AS NOTED	
PROJECT NO.: 1682190	
CONSTR. CONTR. NO.: #####	
NAVFAC DRAWING NO.: ##	
SHEET #	OF #
C-117	
DRAWFORM REVISION: 14 SEP 2023	

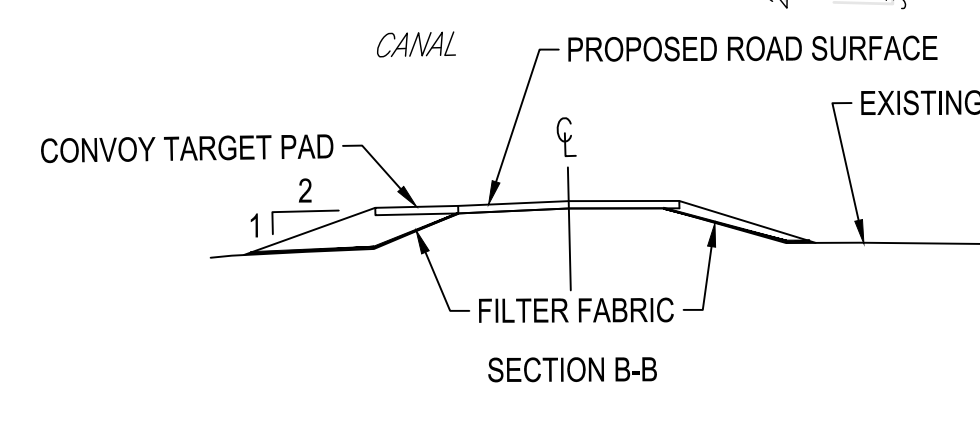
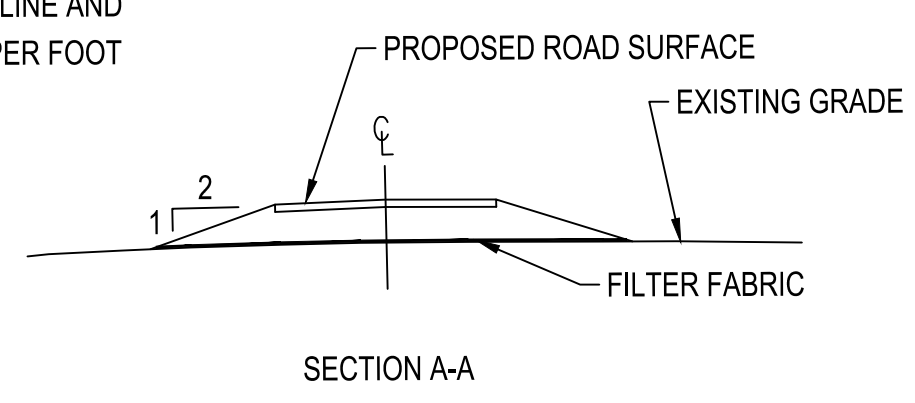
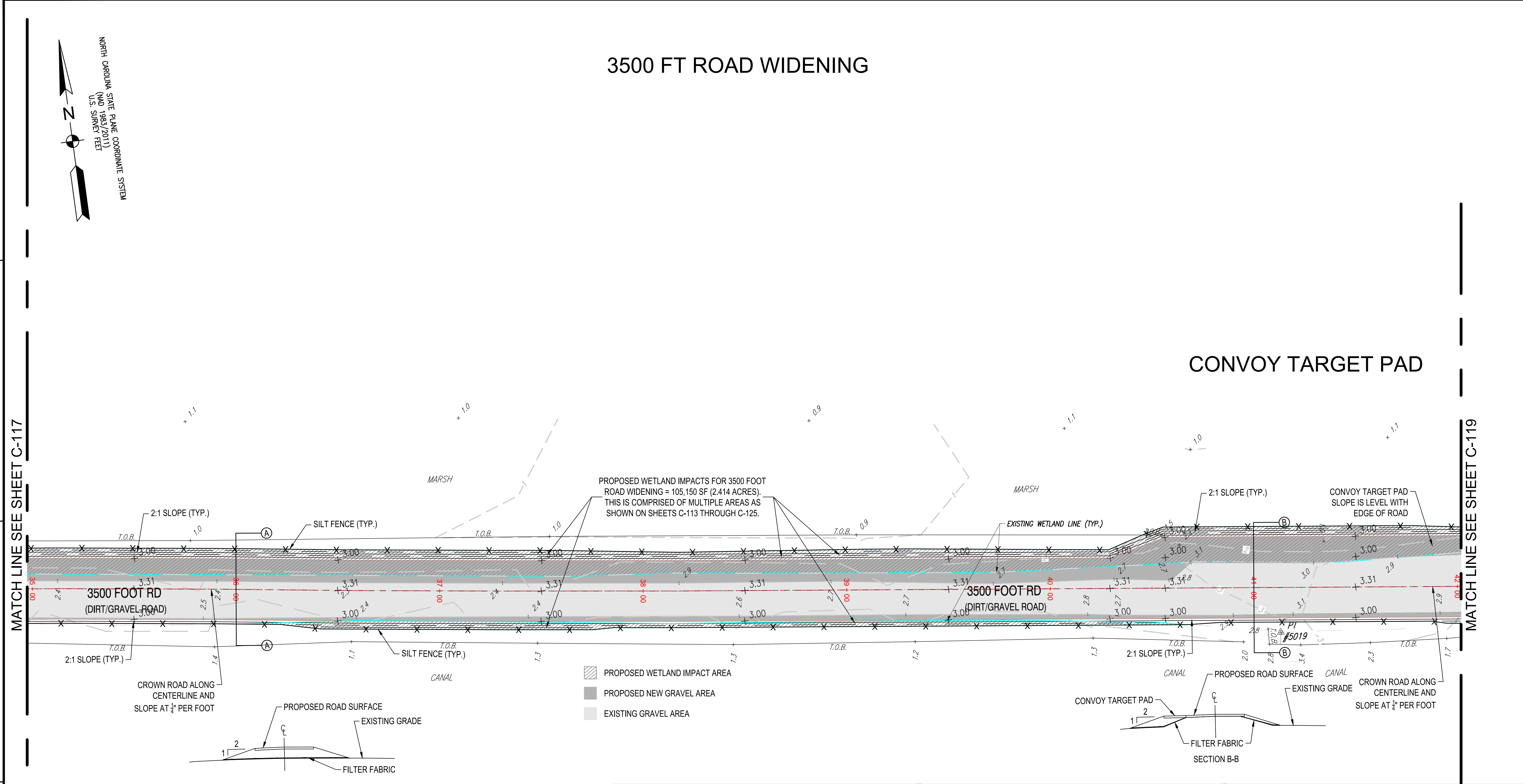
FILE NAME: K:\NC\Drawings\Stations\Improvements\1682190\_3500ftRoadWidening\1682190\_3500ftRoadWidening.dwg LAYOUT NAME: C-118 PLOTTED: Tuesday, July 30, 2024 11:45am USER: howard.brewster

# 3500 FT ROAD WIDENING

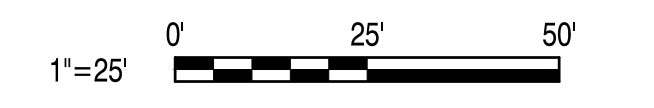
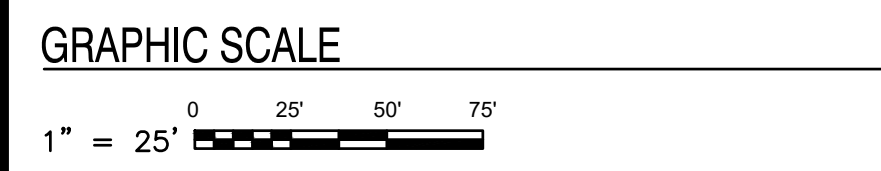


MATCH LINE SEE SHEET C-117

MATCH LINE SEE SHEET C-119



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

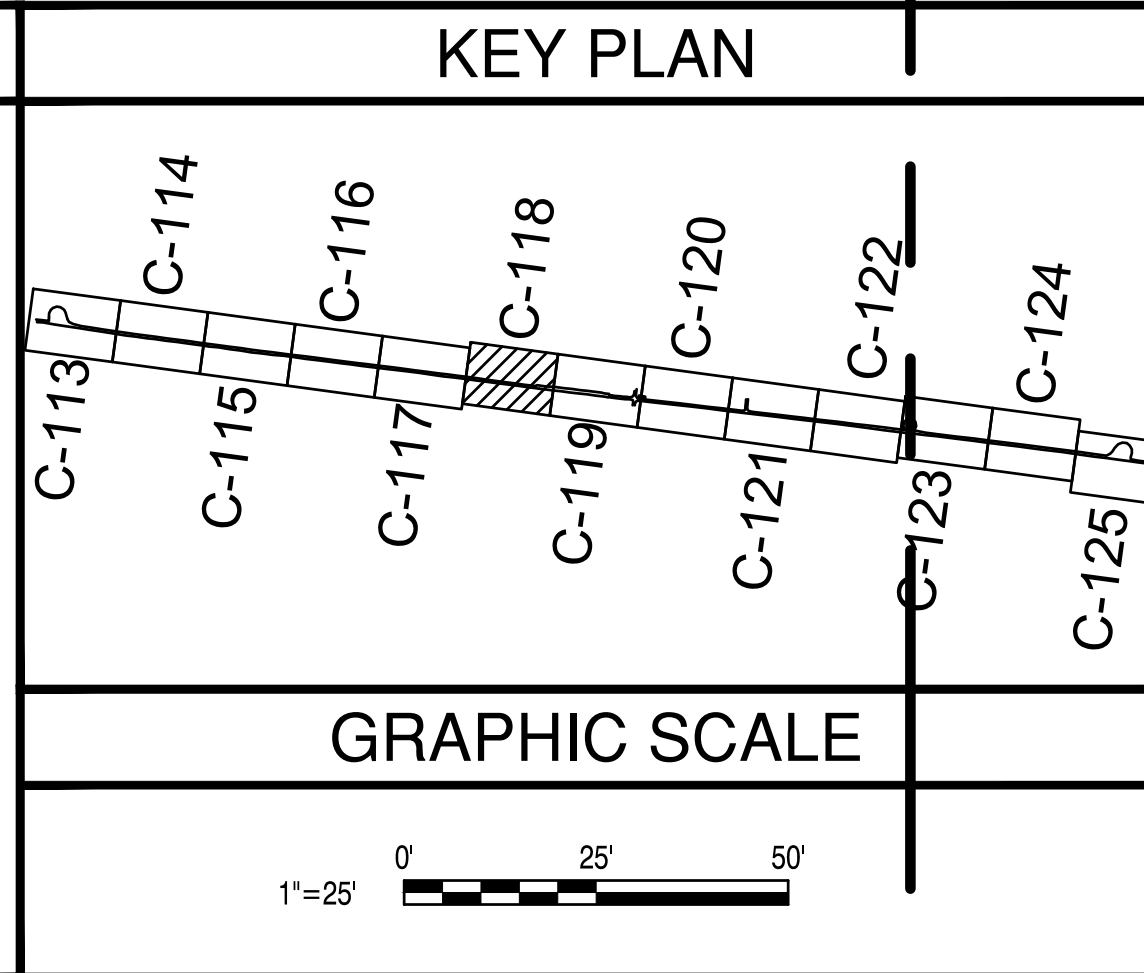
A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)

B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1

2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

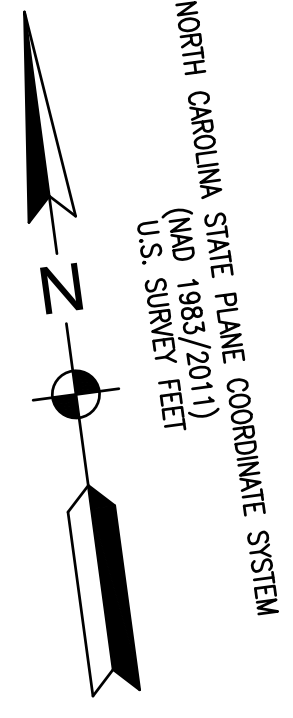


	DATE
	MARK DESCRIPTION
PRE-FINAL NOT FOR CONSTRUCTION	
APPROVED _____ FOR COMMANDER NAVFAC ACTIVITY _____ SATISFACTORY TO DATE DES HRB   DRW HRB   CHK CBM PMDM H.BREWSTER III, P.E. BRANCH MANAGER CBM CHIEF ENGINEER HSDC FIRE PROTECTION #	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT PWD OCEANA FEAD NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (6 OF 13)	
SCALE: AS NOTED EPROJECT NO.: 1682190 CONSTR. CONTR. NO. ##### NAVFAC DRAWING NO. ## SHEET # OF # <b>C-118</b> <small>DRAWFORM REVISION: 14 SEP 2023</small>	

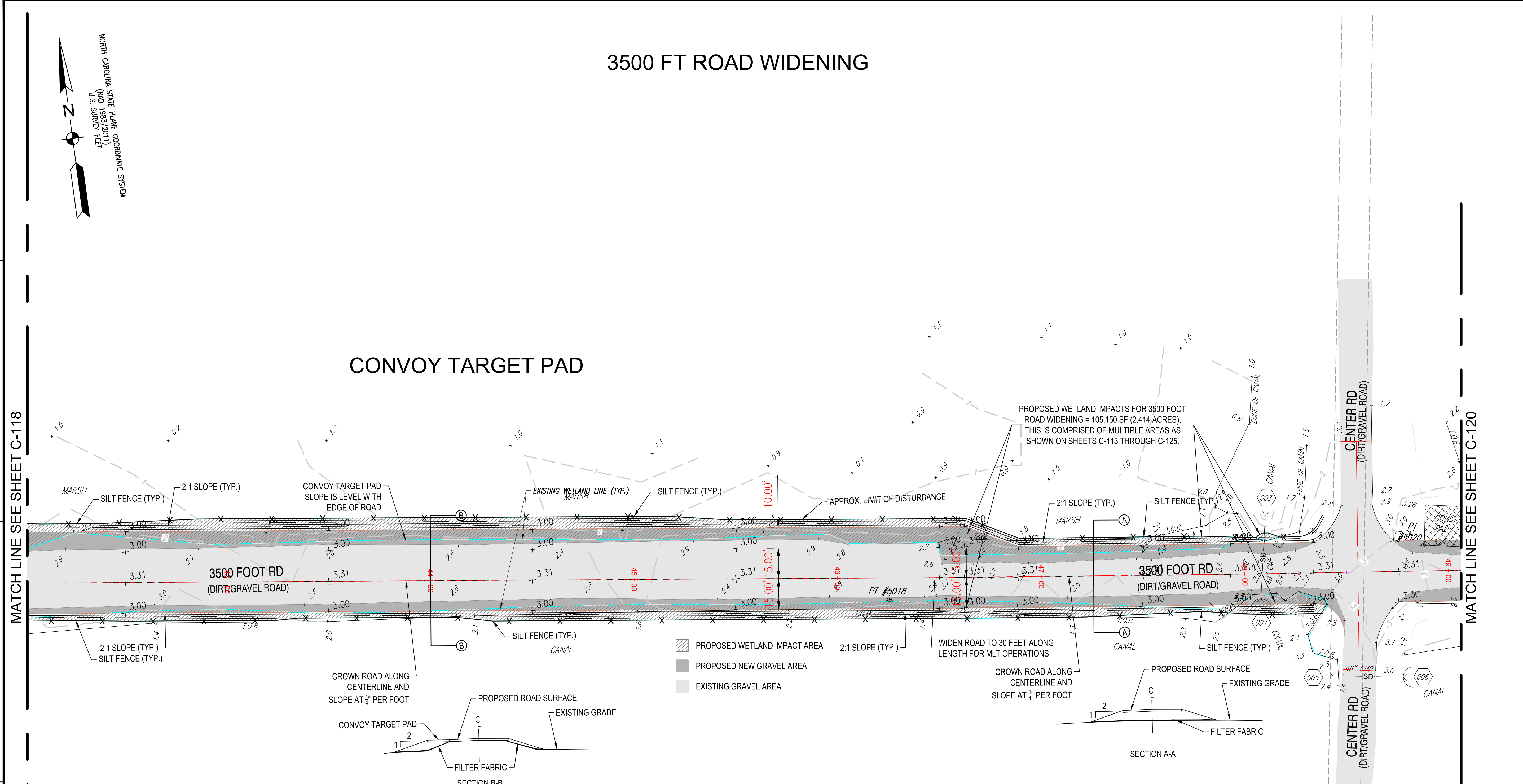


FILE NAME: K:\NC\Drawings\Stations\Improvements\1682190\1682190\_dwg\_3d\1682190-1.dwg LAYOUT NAME: C-119 PLOTTED: Tuesday, July 30, 2024 11:45am USER: howard.brewster

# 3500 FT ROAD WIDENING



## CONVOY TARGET PAD



MATCH LINE SEE SHEET C-118

MATCH LINE SEE SHEET C-120

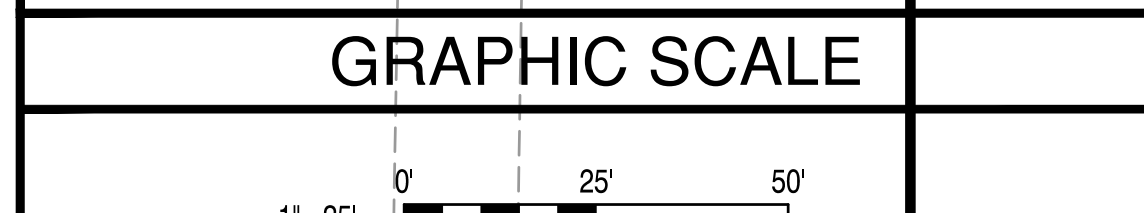
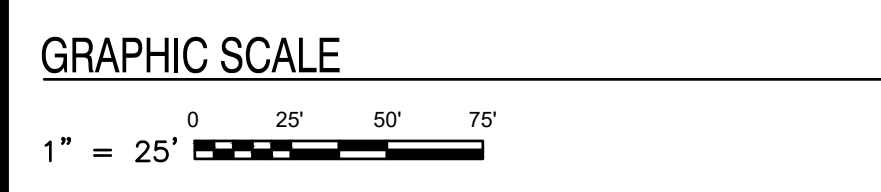
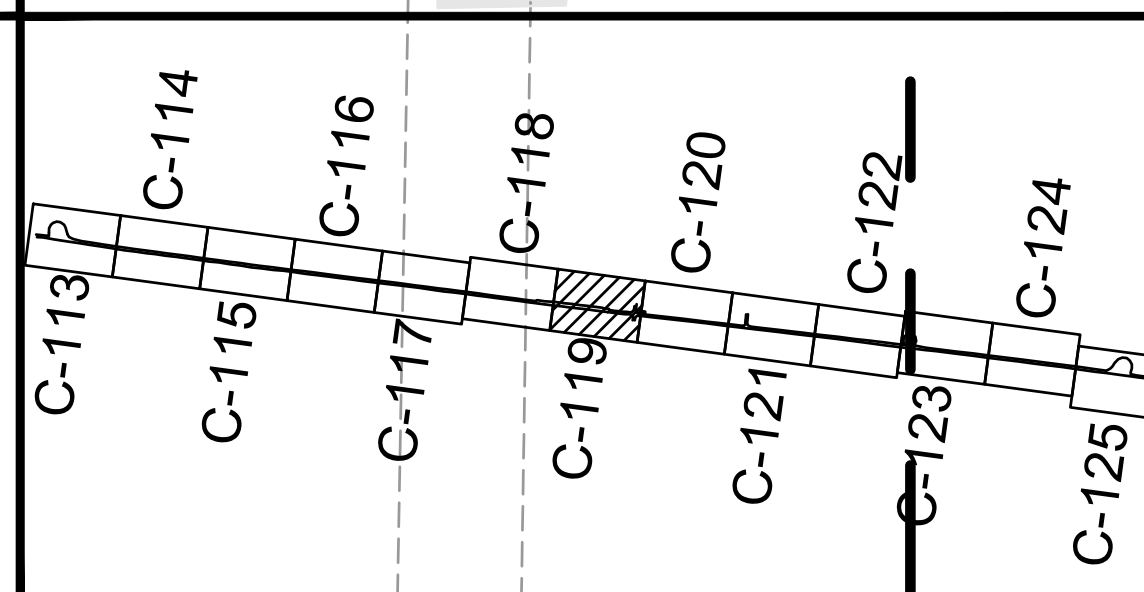
### GENERAL SHEET NOTES

- A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)
- B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

- 1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1
- 2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

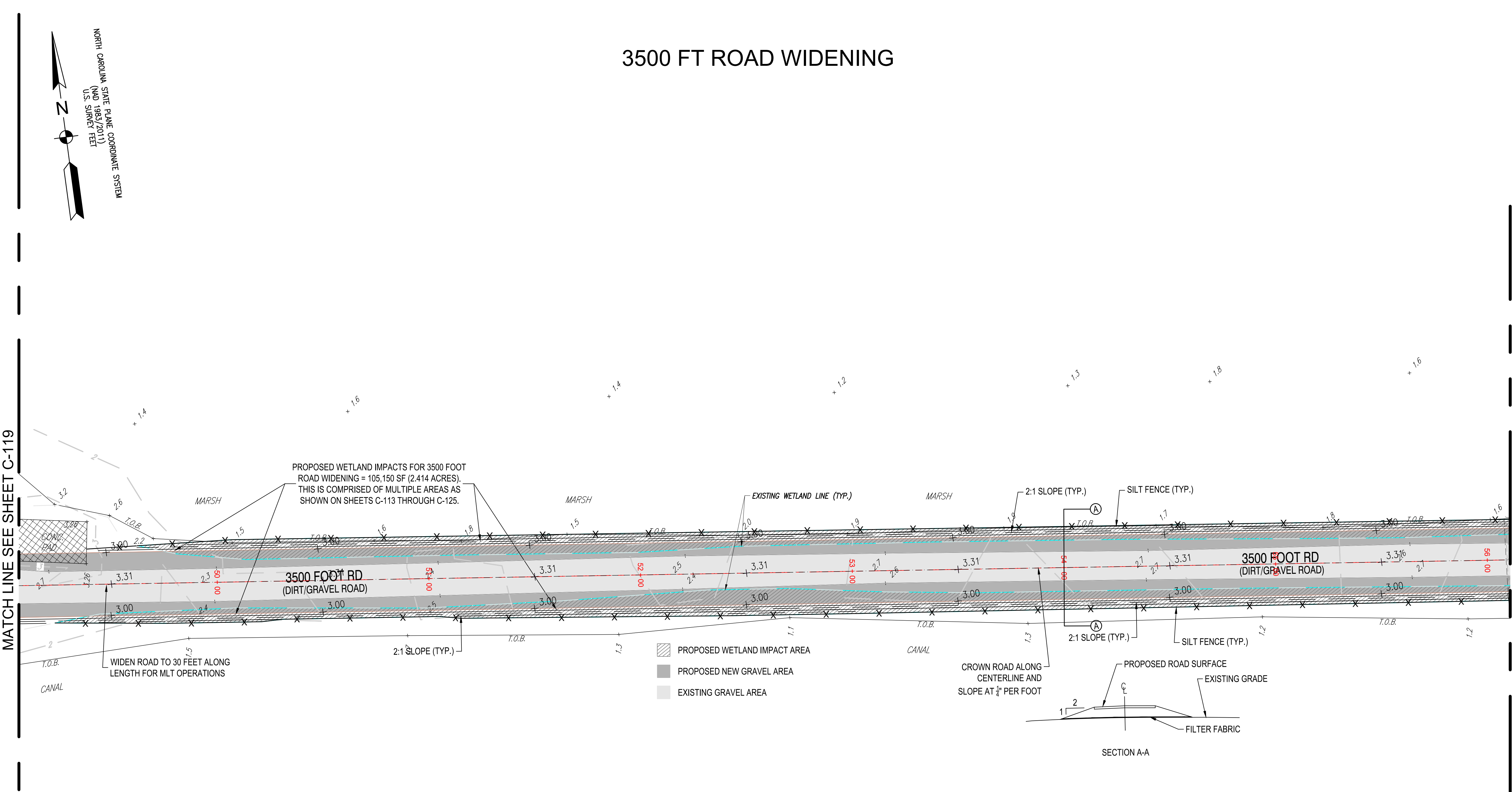
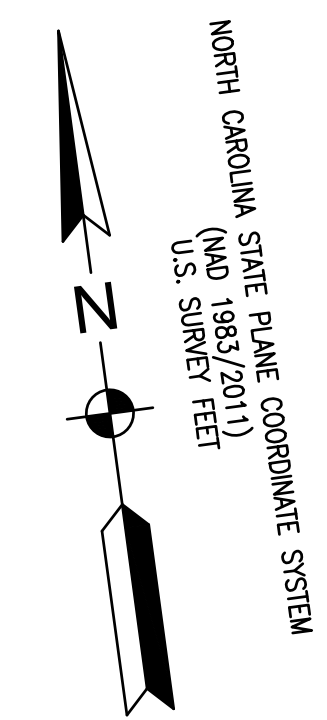
### KEY PLAN



DATE	
MARK	DESCRIPTION
<p><b>PRE-FINAL</b> NOT FOR CONSTRUCTION</p>	
APPROVED	AE INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO DATE	DES HRB   DRW HRB   CHK CBM
	PMDM H.BREWSTER III, P.E.
	BRANCH MANAGER CBM
	CHIEF ENGINEER HSDC
	FIRE PROTECTION #
<p>NAVFACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVAL DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (7 OF 13)</p>	
SCALE: AS NOTED	PROJECT NO.: 1682190
CONSTR. CONTR. NO.	#####
NAVFAC DRAWING NO.	##
SHEET #	OF #
<p><b>C-119</b></p>	
DRAWFORM REVISION: 14 SEP 2023	

FILE NAME: K:\NC\Drawings\Stations\Improvements\1682190\_001\1682190\_001.dwg; USER: hward; DATE: 07/30/2024 11:46am; PROJECT: 1682190; SHEET: C-120; TITLE: 3500 FOOT ROAD WIDENING IMPROVEMENTS (8 OF 13)

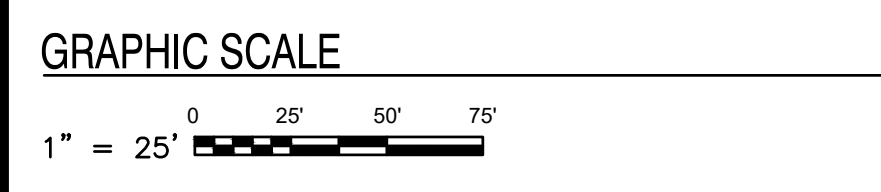
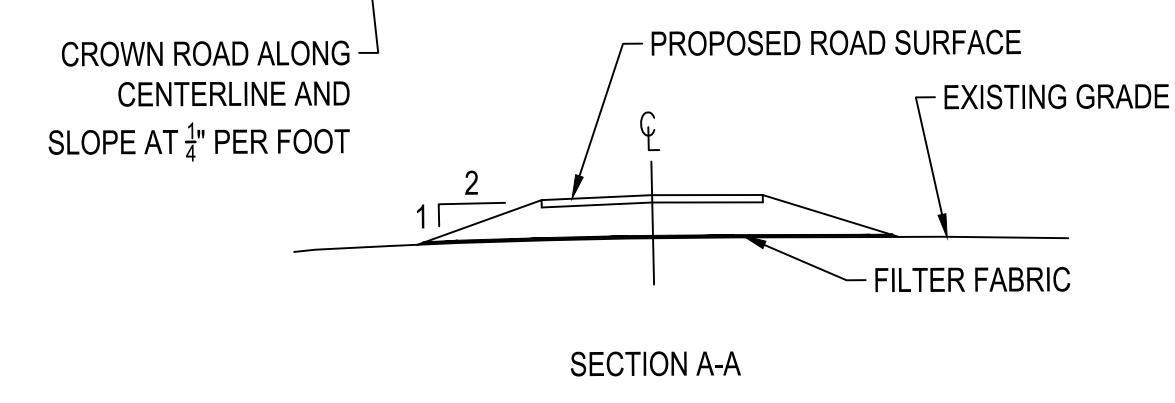
# 3500 FT ROAD WIDENING



MATCH LINE SEE SHEET C-119

MATCH LINE SEE SHEET C-121

- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



**GENERAL SHEET NOTES**

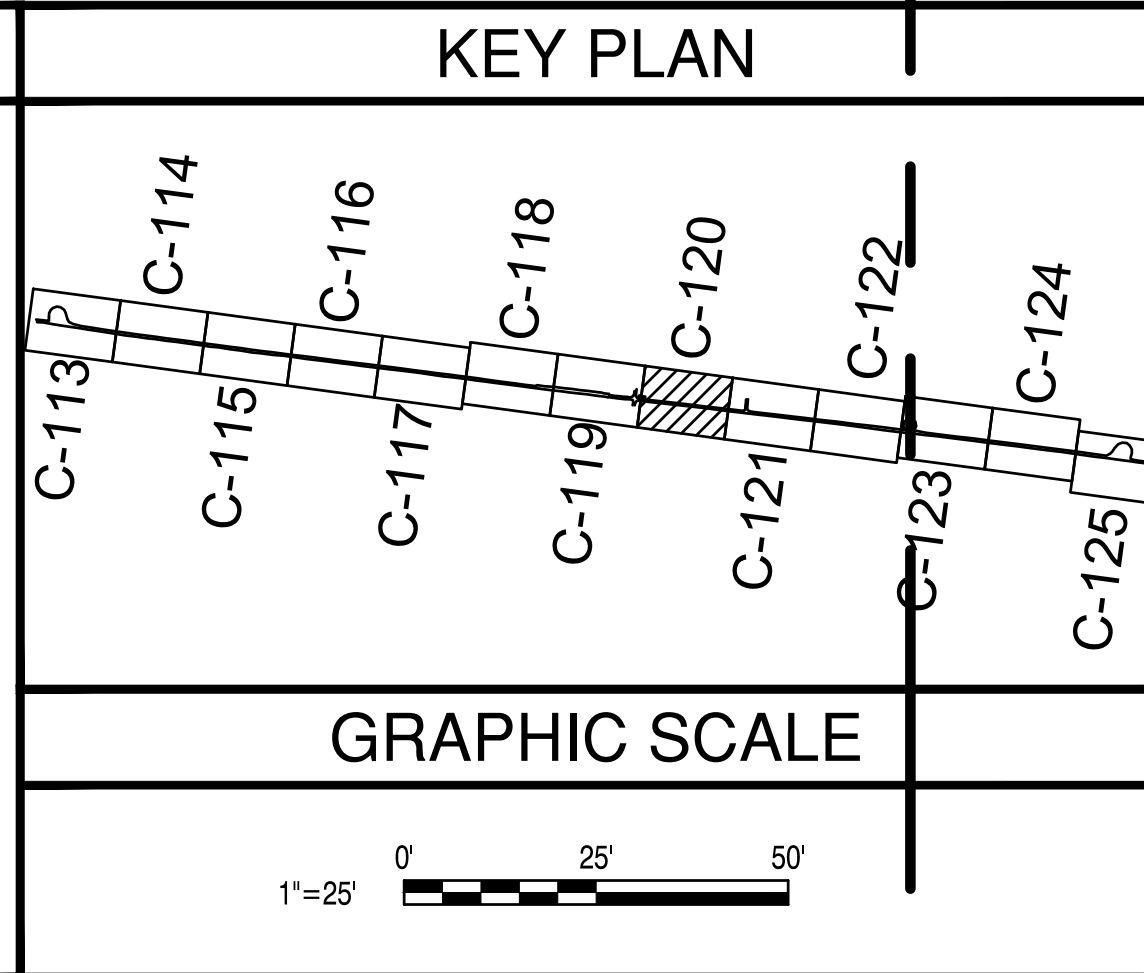
A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)

B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

**KEYNOTES**

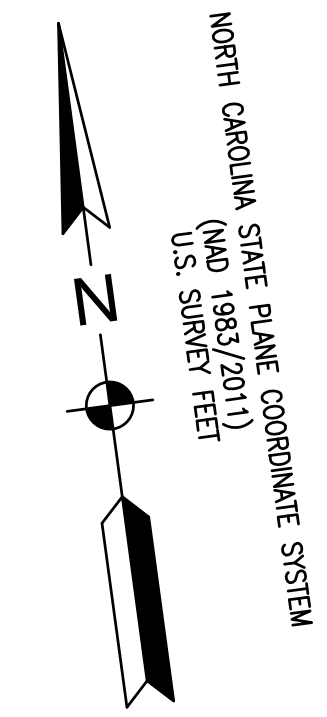
1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1

2. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).



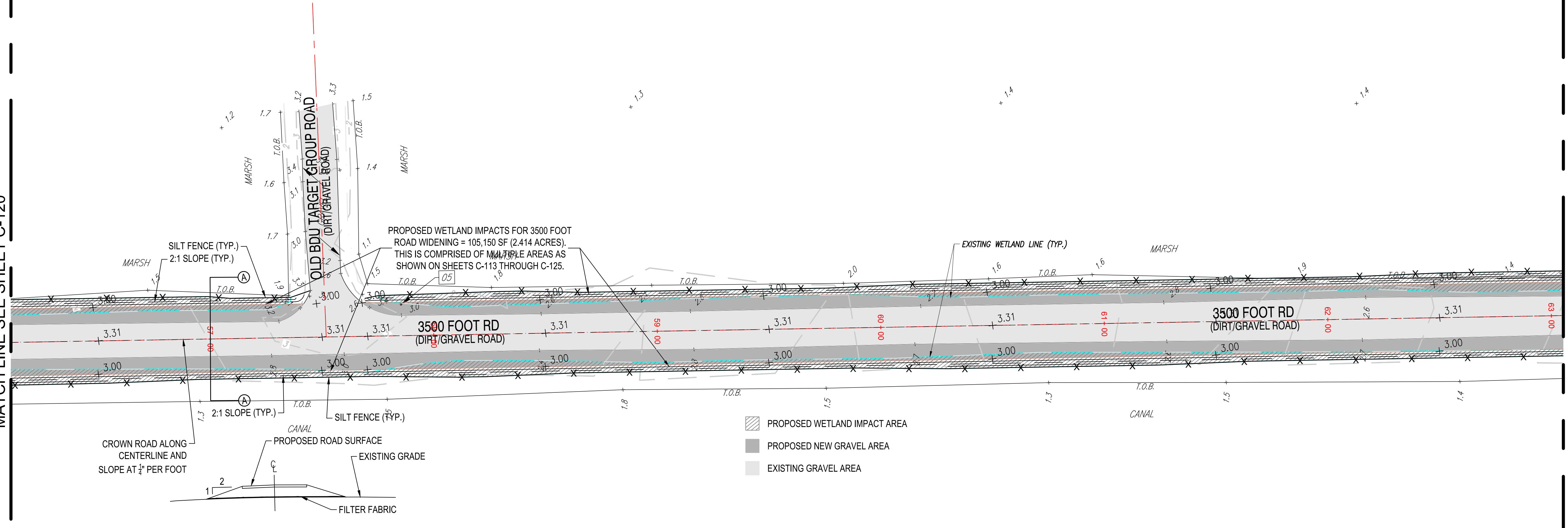
	DATE
	MARK
	DESCRIPTION
<b>PRE-FINAL NOT FOR CONSTRUCTION</b>	
SEAL	
AE INFO	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	HRB
DRW	HRB
CHK	CBM
PMDM	H. BREWSTER III, P.E.
BRANCH MANAGER	CBM
CHIEF ENGINEER	HSDC
FIRE PROTECTION	#
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (8 OF 13)	
SCALE: AS NOTED	
PROJECT NO.: 1682190	
CONSTR. CONTR. NO. #####	
NAVFAC DRAWING NO. ##	
SHEET # OF #	
<b>C-120</b>	
DRAWFORM REVISION: 14 SEP 2023	

# 3500 FT ROAD WIDENING



MATCH LINE SEE SHEET C-120

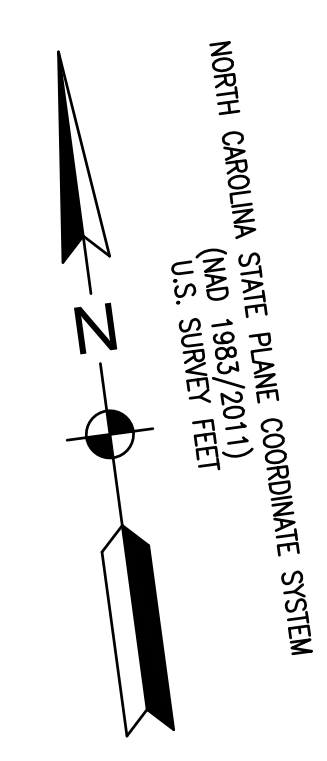
MATCH LINE SEE SHEET C-122





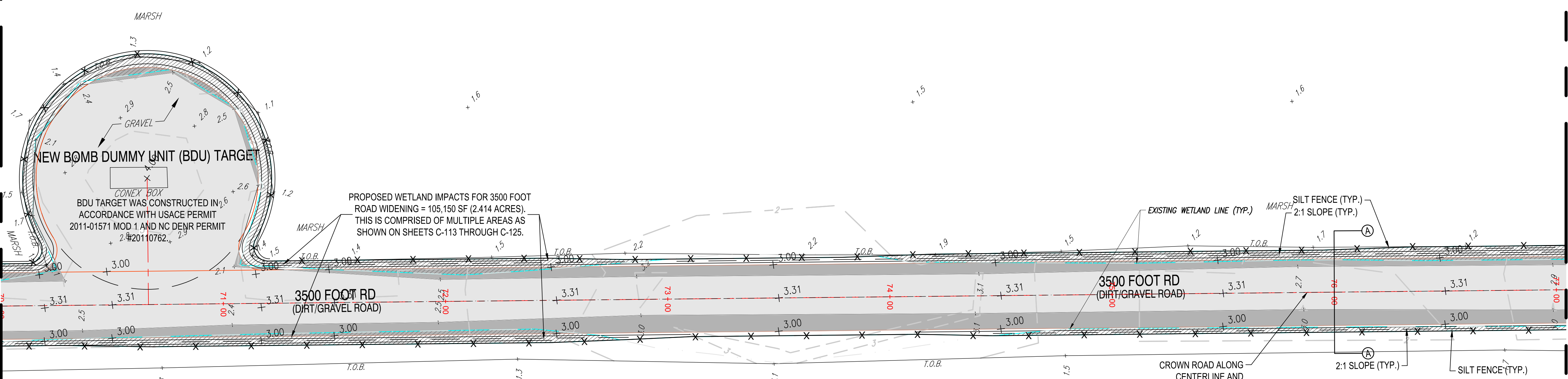
FILE NAME: K:\NC\darecounty\Stewart\blimpimprovements\blimpimprovements2021\_1682190\_dwr\_alterimprovements\Design\DWSSheets\C-123.dwg LAYOUT NAME: C-123 PLOTTED: Tuesday, July 30, 2024 11:47am USER: howard.brewster

# 3500 FT ROAD WIDENING

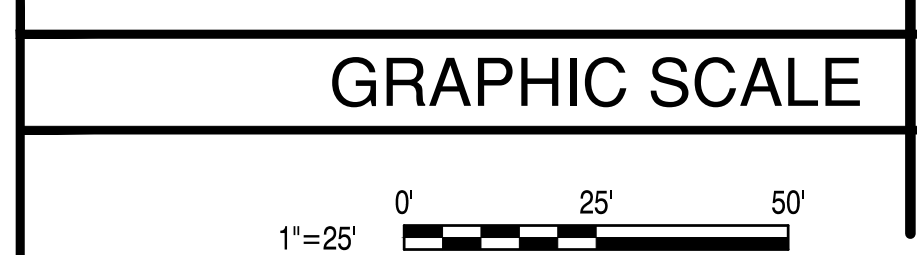
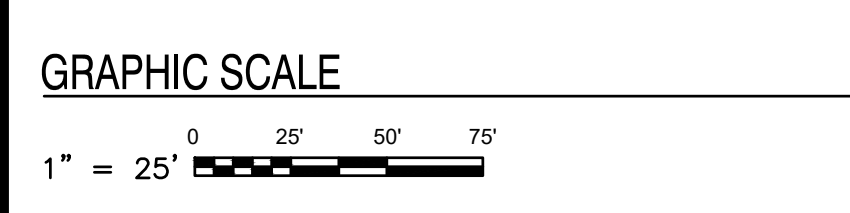
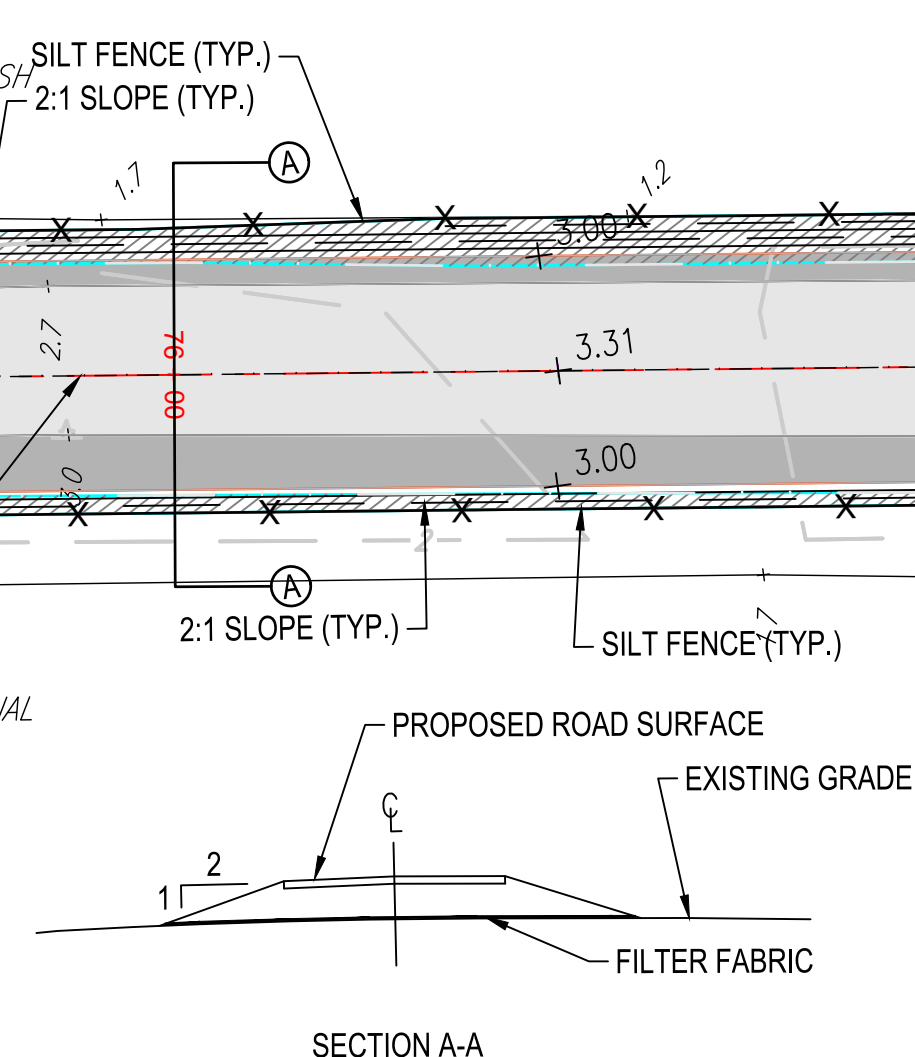


MATCH LINE SEE SHEET C-122

MATCH LINE SEE SHEET C-124



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

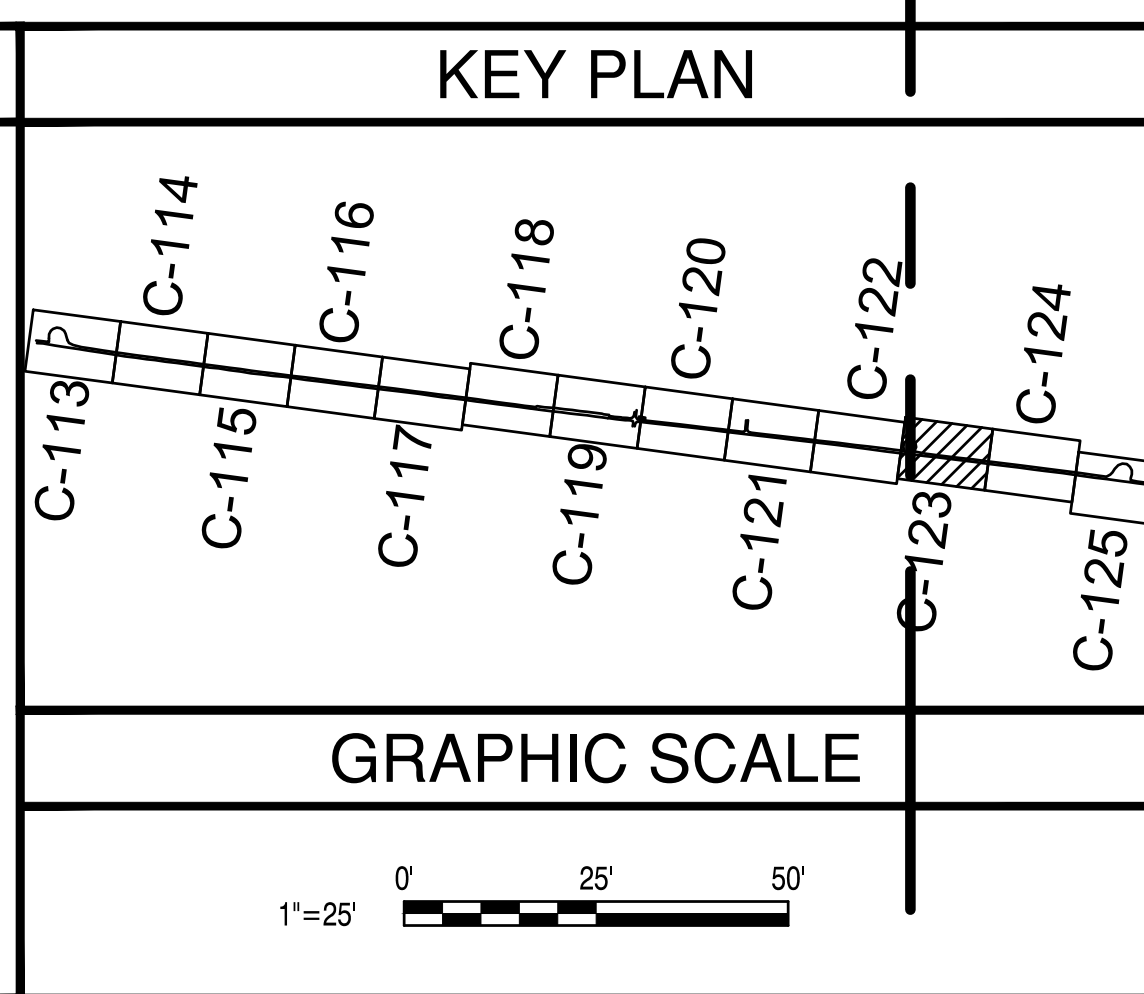
A. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL NOTES (E.G. GENERAL, DEMOLITION, ETC...)

B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

1. THIS IS THE MULTI-LINE TEXT NOTE BLOCK FOR ALL KEYNOTES (E.G. WORK, CONSTRUCTION, DEMO, ETC...) REFERENCE ERDC/ITL TR-19-6 | 5.1

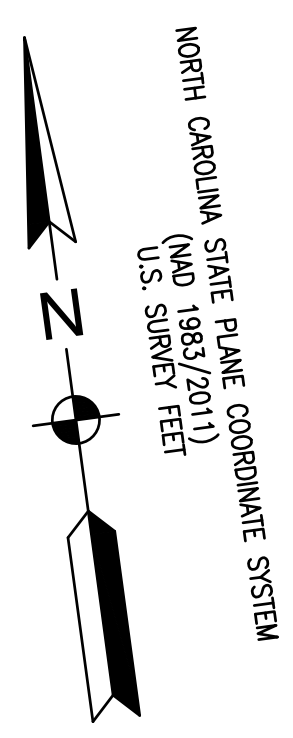
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DATE	
MARK	DESCRIPTION
<b>PRE-FINAL</b> NOT FOR CONSTRUCTION	
APPROVED	AE INFO
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES HRB   DRW HRB   CHK CBM	
PM/DM H. BREWSTER III, P.E.	
BRANCH MANAGER CBM	
CHIEF ENGINEER HSDC	
FIRE PROTECTION	#
NAVFACILITIES ENGINEERING SYSTEMS COMMAND	
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT	
NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA	
NAVY DARE BOMBING RANGE	
DARE COUNTY, NORTH CAROLINA	
<b>DARE COUNTY BOMBING RANGE</b>	
<b>SITE IMPROVEMENTS</b>	
3500 FOOT ROAD WIDENING IMPROVEMENTS (11 OF 13)	
SCALE: AS NOTED	
PROJECT NO.: 1682190	
CONSTR. CONTR. NO.	#####
NAVFAC DRAWING NO.	##
SHEET # OF #	
<b>C-123</b>	
DRAWFORM REVISION: 14 SEP 2023	

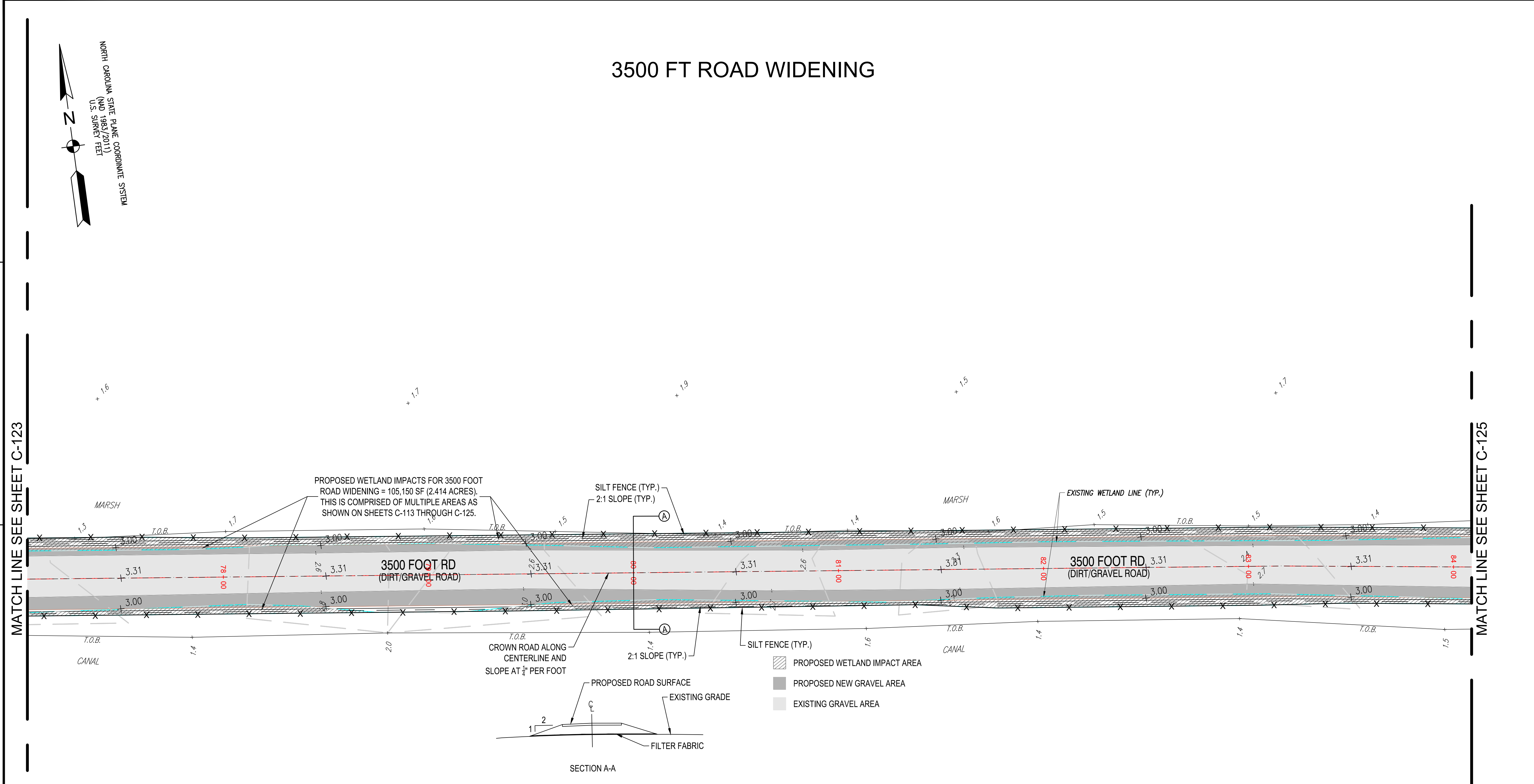
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# 3500 FT ROAD WIDENING

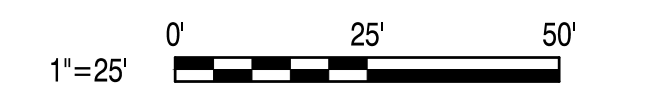
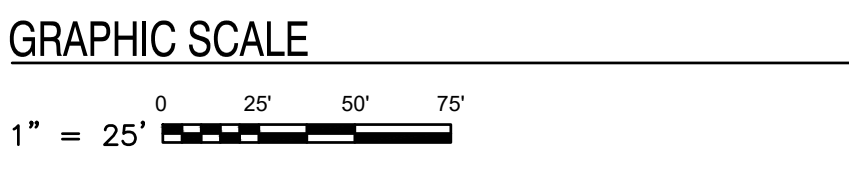
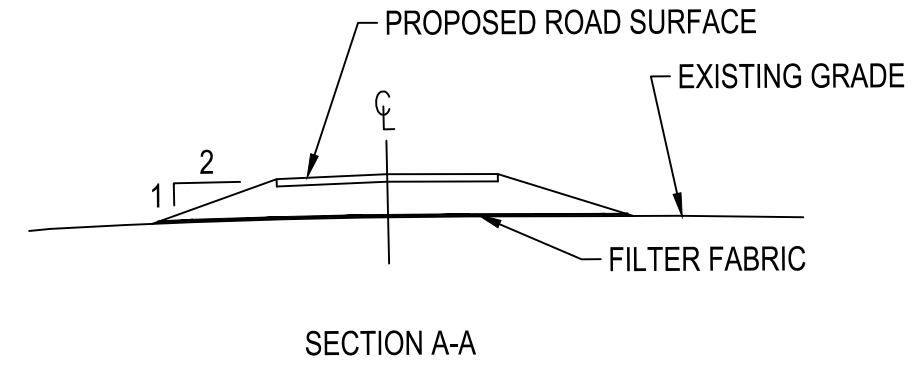


MATCH LINE SEE SHEET C-123

MATCH LINE SEE SHEET C-125



- PROPOSED WETLAND IMPACT AREA
- PROPOSED NEW GRAVEL AREA
- EXISTING GRAVEL AREA



### GENERAL SHEET NOTES

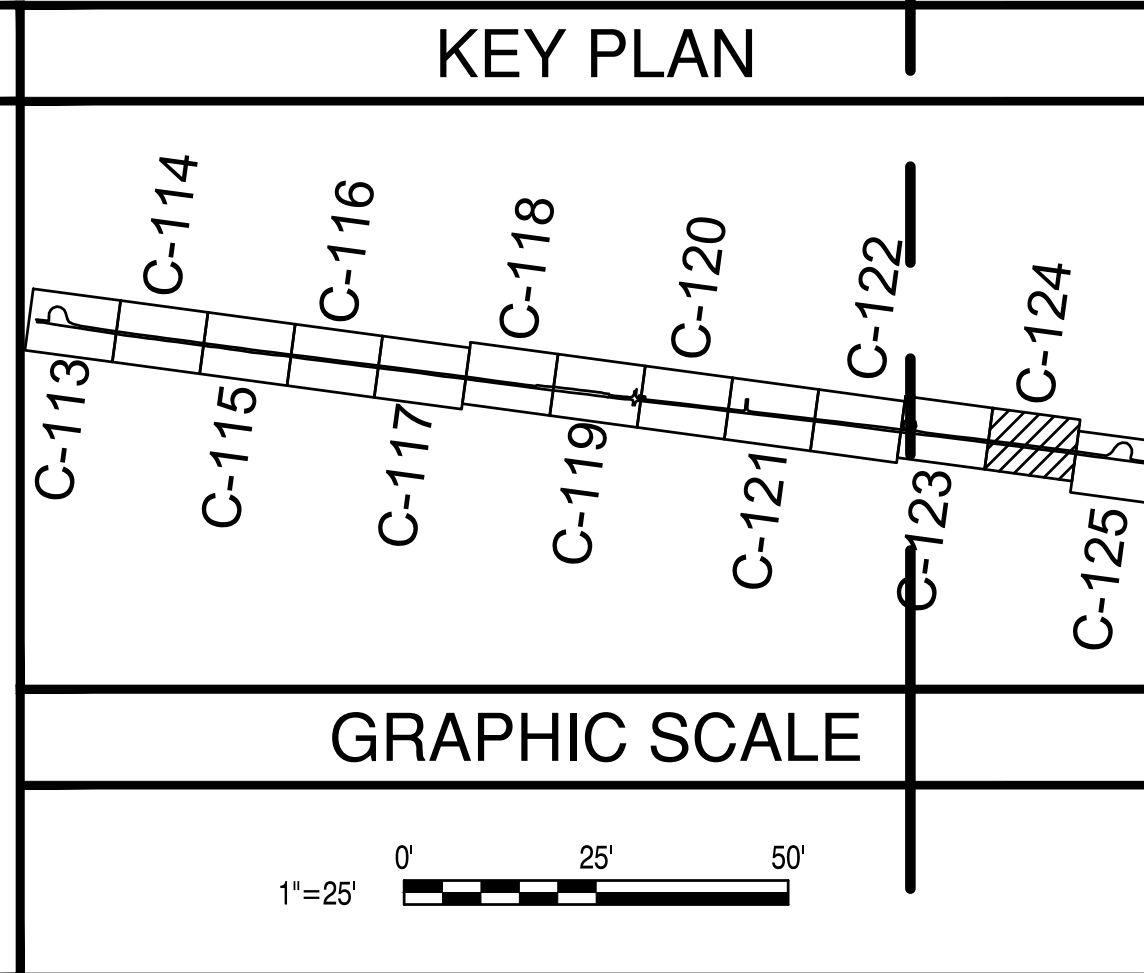
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B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

### KEYNOTES

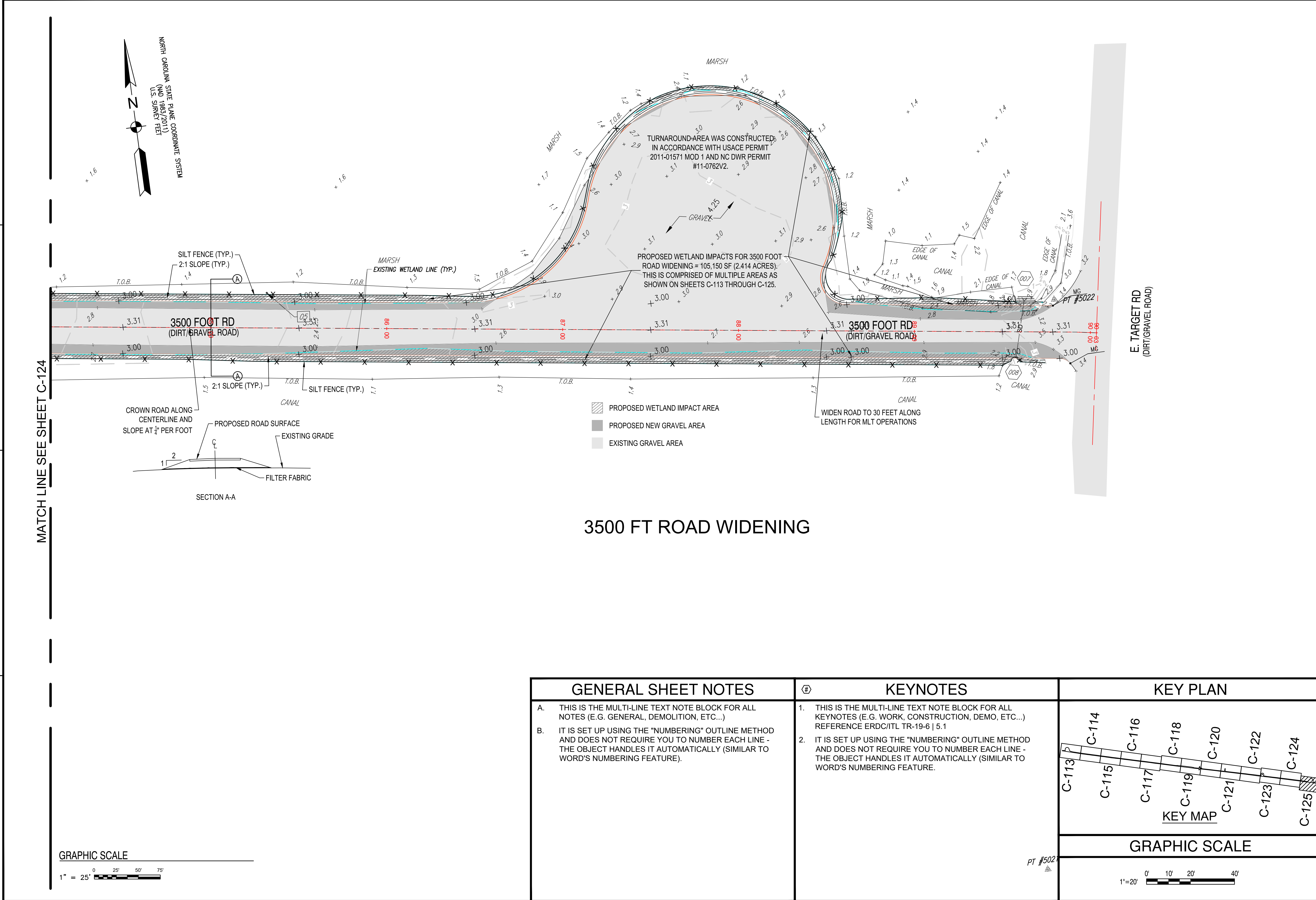
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	DATE
	MARK DESCRIPTION
PRE-FINAL NOT FOR CONSTRUCTION	
APPROVED _____ FOR COMMANDER NAVFAC ACTIVITY _____ SATISFACTORY TO DATE _____ DES: HRB   DRW: HRB   CHK: CBM PMDM: H. BREWSTER III, P.E. BRANCH MANAGER: CBM CHIEF ENGINEER: HSDC FIRE PROTECTION: #	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLANT NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA PWD OCEANA FEAD NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (12 OF 13)	
SCALE: AS NOTED PROJECT NO.: 1682190 CONSTR. CONTR. NO.: #####-##-##### NAVFAC DRAWING NO.: ## SHEET # OF # <b>C-124</b> <small>DRAWFORM REVISION: 14 SEP 2023</small>	

FILE NAME: I:\C:\darcocopy\Stewart\blimpimprovements\blimpimprovements2021\_1682190\_dwr\_schematic\blimpimprovements2021\_1682190\_dwr\_schematic.dwg LAYOUT NAME: C-125 PLOTTED: Tuesday, July 30, 2024 11:17am USER: howard.brewster



### 3500 FT ROAD WIDENING

**GENERAL SHEET NOTES**

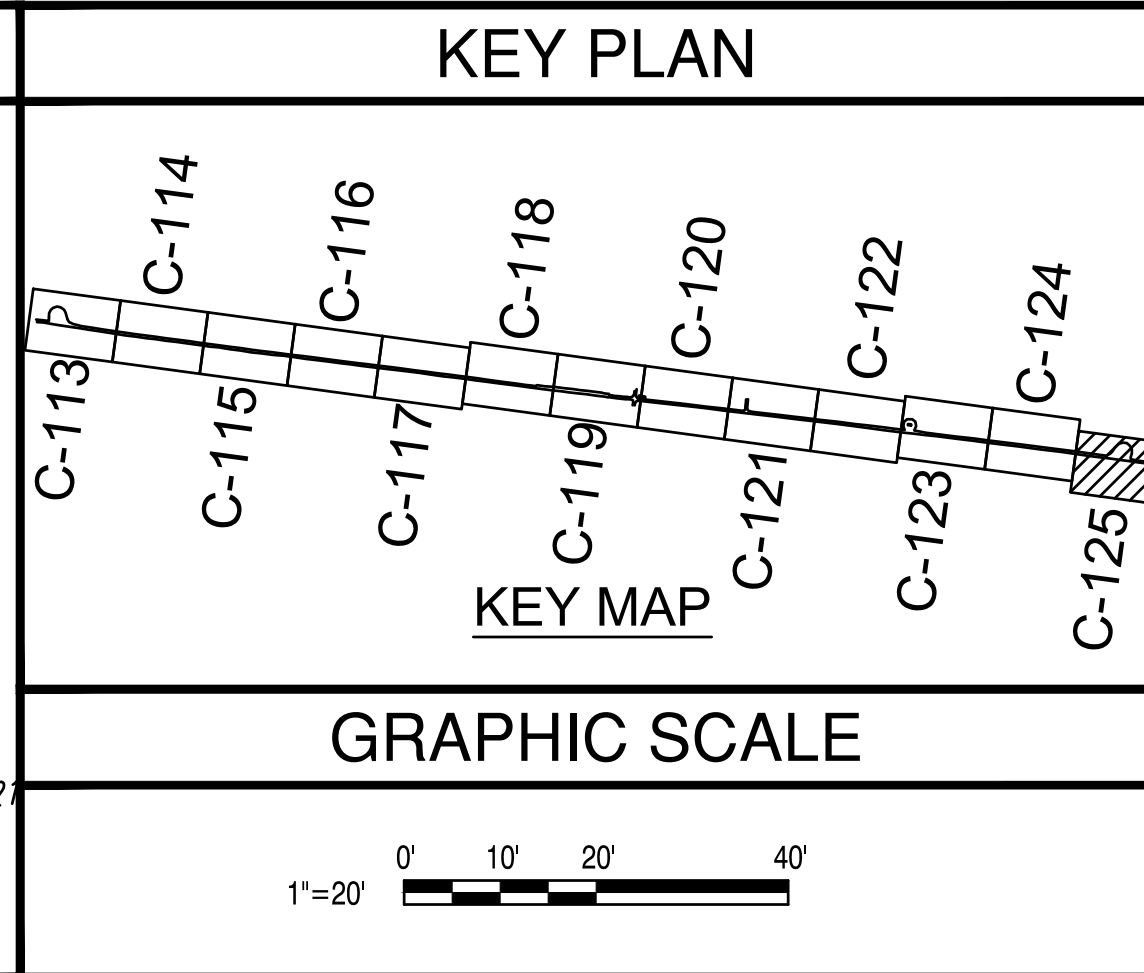
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B. IT IS SET UP USING THE "NUMBERING" OUTLINE METHOD AND DOES NOT REQUIRE YOU TO NUMBER EACH LINE - THE OBJECT HANDLES IT AUTOMATICALLY (SIMILAR TO WORD'S NUMBERING FEATURE).

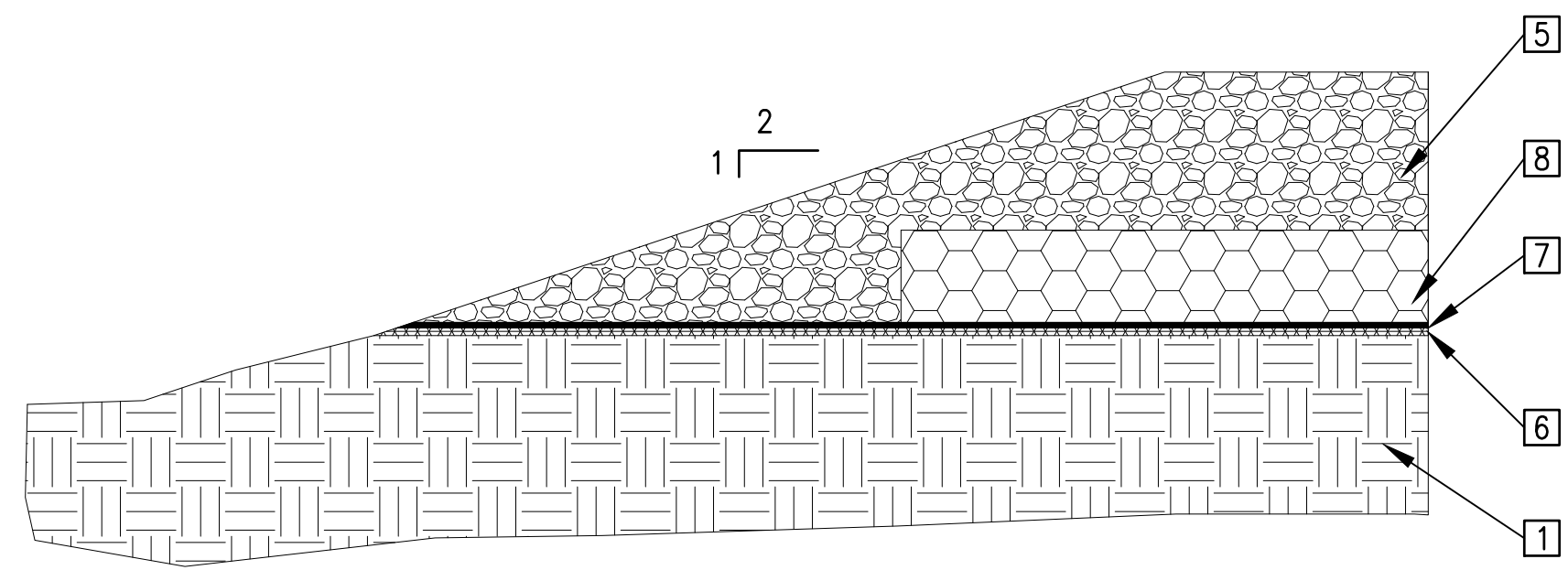
**KEYNOTES**

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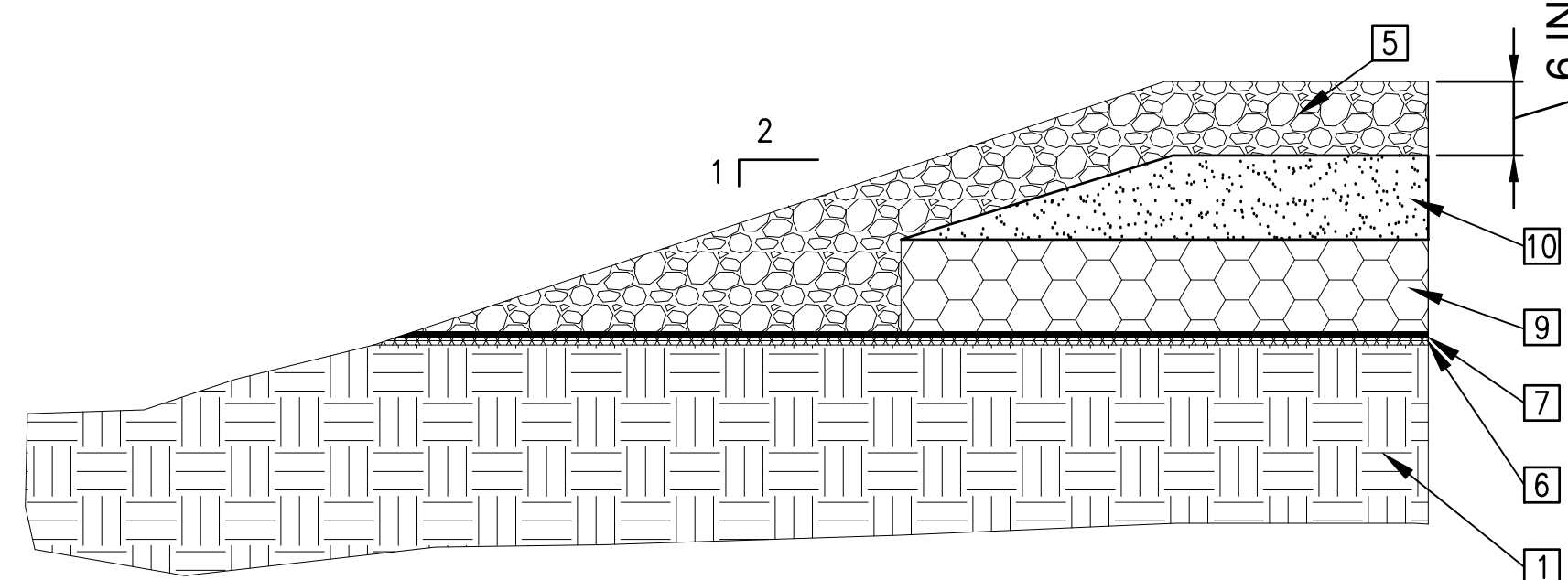
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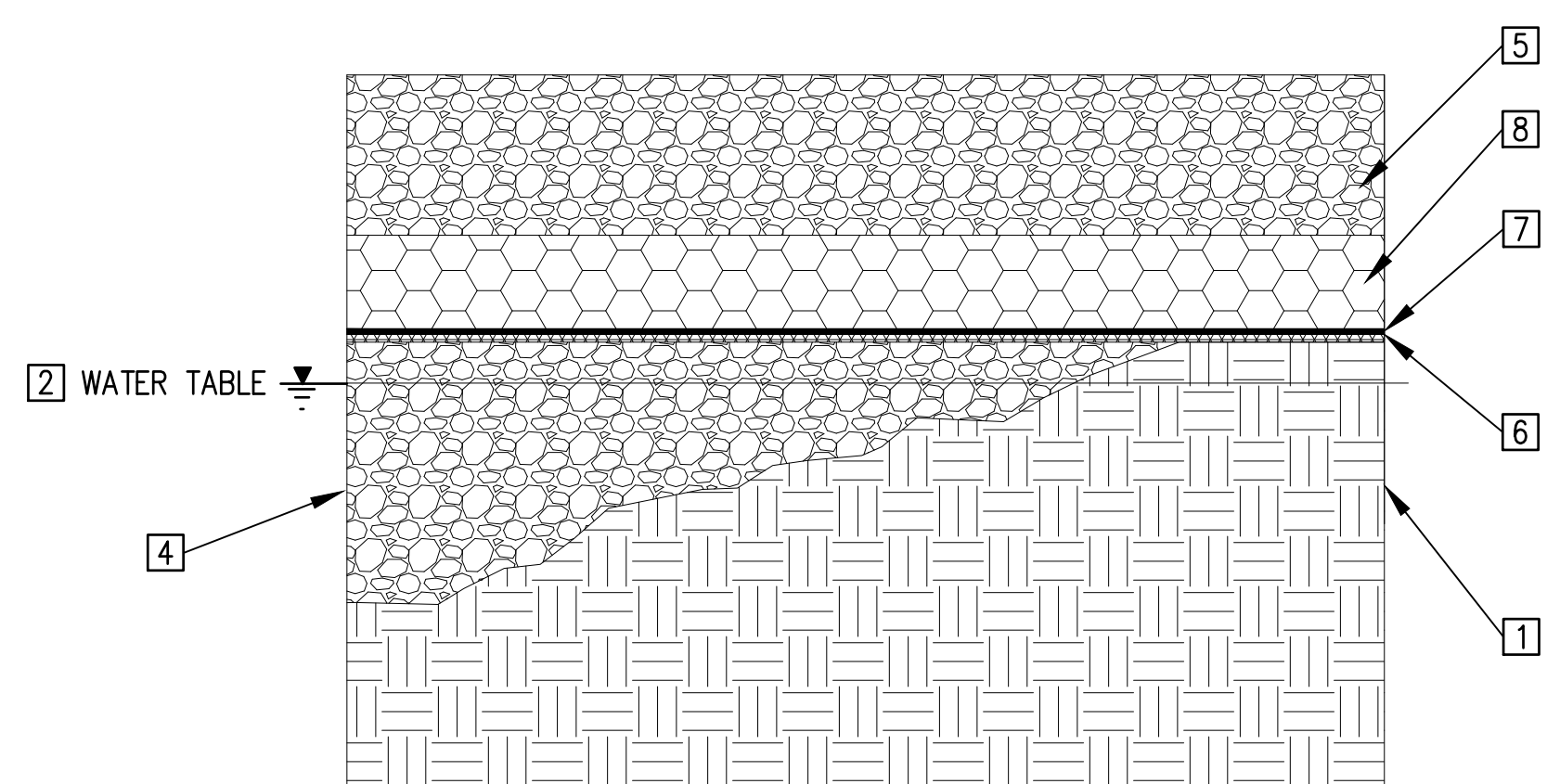
DATE	
MARK DESCRIPTION	
<p><b>PRE-FINAL</b> NOT FOR CONSTRUCTION</p>	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	HRB   DRW
CHK	HRB   CBM
PM/DM	H. BREWSTER III, P. E.
BRANCH MANAGER CBM	
CHIEF ENGINEER HSDC	
FIRE PROTECTION #	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDLAND NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA PWD OCEANA FEAD NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA <b>DARE COUNTY BOMBING RANGE</b> <b>SITE IMPROVEMENTS</b> 3500 FOOT ROAD WIDENING IMPROVEMENTS (13 OF 13)	
SCALE: AS NOTED	
EPROJCT NO.: 1682190	
CONSTR. CONTR. NO. #####	
NAVFAC DRAWING NO. ##	
SHEET #	OF #
<b>C-125</b>	
DRAWING REVISION: 14 SEP 2023	



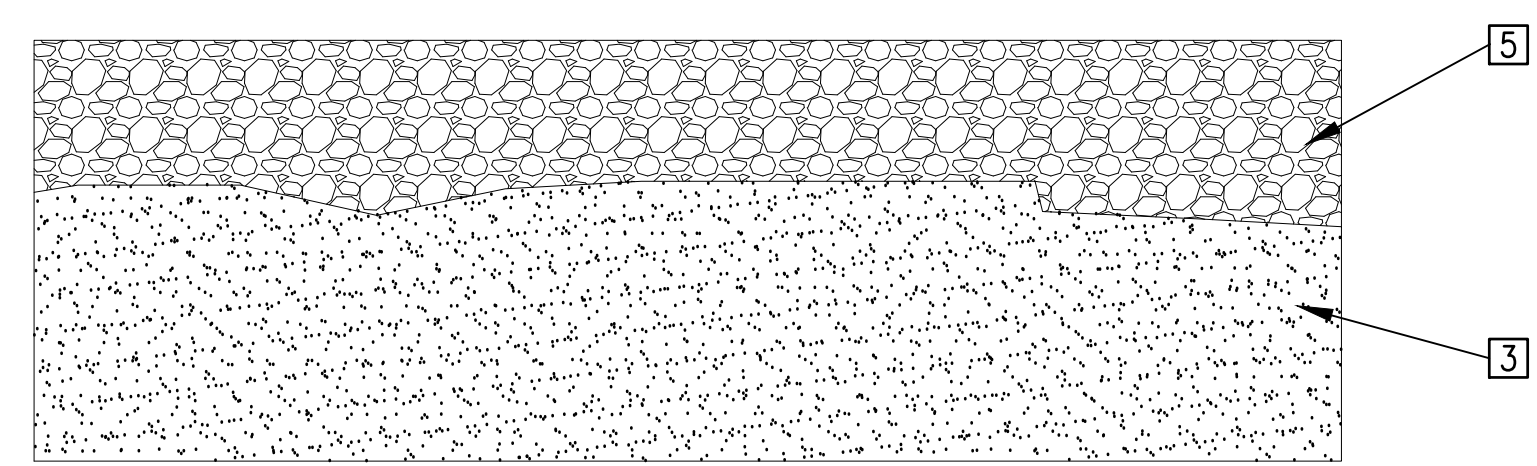
TYPICAL FILL SECTION - WETLANDS



TYPICAL FILL SECTION - ROAD WIDENING AND CONSTRUCTION



TYPICAL FILL SECTION - WETLANDS WITH STANDING WATER



TYPICAL FILL SECTION - EXISTING TARGETS

- 1 EXISTING SUBGRADE
- 2 WATER TABLE
- 3 EXISTING CONDITIONS CONSISTING OF STABLE SUBGRADE OF SAND
- 4 SACRIFICIAL STONE TO BE PLACED BELOW THE WATER TABLE TO ESTABLISH GRADES. SACRIFICIAL STONE SHALL BE FILL IDENTIFIED AS COMMON FILL IN THE NOTES AND SPECIFICATIONS.
- 5 NCDOT ABC STONE OR CRUSHED CONCRETE PLACED IN ACCORDANCE WITH NOTES AND SPECIFICATIONS. STONE DEPTH VARIES AND SHALL BE PLACED TO ESTABLISH FINISHED GRADES SHOWN ON PLANS.
- 6 NON-WOVEN GEOTEXTILE FABRIC MEETING THE MINIMUM SPECIFICATIONS OUTLINED IN TABLE 1 AND INSTALLED PER EARTHWORK NOTES AND MANUFACTURERS SPECIFICATIONS.
- 7 GEOGRID: SINGLE LAYER, BIAXIAL OR TRIAXIAL GEOGRID MEETING THE MINIMUM SPECIFICATIONS OUTLINED IN TABLE 2 AND TABLE 3 AND INSTALLED PER EARTHWORK NOTES AND MANUFACTURERS SPECIFICATIONS.
- 8 CELLULAR CONFINEMENT MEETING THE MINIMUM SPECIFICATIONS OUTLINED IN TABLE 4 AND INSTALLED PER EARTHWORK NOTES AND MANUFACTURERS SPECIFICATIONS. CELLULAR CONFINEMENT SHALL BE FILLED WITH NC DOT ABC STONE OR CRUSHED CONCRETE. CELLULAR CONFINEMENT SHALL HAVE A MINIMUM OF 10" COVER. REMOVE CELLULAR CONFINEMENT FROM SECTION IF LESS THAN 10" COVER, BUT RETAIN GEOGRID AND GEOFABRIC.
- 9 CELLULAR CONFINEMENT MEETING THE MINIMUM SPECIFICATIONS OUTLINED IN TABLE 4 AND INSTALLED PER EARTHWORK NOTES AND MANUFACTURERS SPECIFICATIONS. CELLULAR CONFINEMENT SHALL BE FILLED WITH SELECT FILL. CELLULAR CONFINEMENT SHALL HAVE A MINIMUM OF 10" COVER. REMOVE CELLULAR CONFINEMENT FROM SECTION IF LESS THAN 10" COVER, BUT RETAIN GEOGRID AND GEOFABRIC.
- 10 SELECT FILL

TABLE 1		MINIMUM
NON-WOVEN GEOTEXTILE REQUIREMENTS		
GEOTEXTILE PROPERTY	ASTM TEST METHOD	MINIMUM REQUIREMENTS
GRAB STRENGTH (LB)	D 4632	380
PUNCTURE STRENGTH (LB)	D 4833	50
BURST STRENGTH (PSI)	D 3786	800
TRAPEZOIDAL TEAR (LB)	D 4533	145
APPARENT OPENING SIZE (MM)	D 4751	0.150
PERMITTIVITY (1/SEC)	D 4491	0.70
ULTRAVIOLET DEGRADATION (% RETAINED @500 HRS)	D 4355	70
POLYMER TYPE		POLYESTER OR POLYPROPYLENE

TABLE 2		MINIMUM BIAXIAL
GEOGRID REQUIREMENTS		
GEOGRID PROPERTY	ASTM TEST METHOD	MINIMUM REQUIREMENTS
MINIMUM RIB THICKNESS	DIRECT MEASURE	0.07
APERTURE SIZE - MACHINE DIRECTION (IN)	DIRECT MEASURE	1.0
APERTURE SIZE - CROSS MACHINE DIRECTION (IN)	DIRECT MEASURE	1.0
TENSILE STRENGTH @ 5% STRAIN (LB/FT) MACHINE DIRECTION	D 6637	1200
MTENSILE STRENGTH @ 5% STRAIN (LB/FT) CROSS MACHINE DIRECTION		1370
ULTIMATE TENSILE STRENGTH (LB/FT) MACHINE DIRECTION		1850
ULTIMATE TENSILE STRENGTH (LB/FT) CROSS MACHINE DIRECTION		2050
MANUFACTURING PROCESS		PUNCHED & DRAWN

TABLE 3		MINIMUM TRIAXIAL
GEOGRID REQUIREMENTS		
GEOGRID PROPERTY	ASTM TEST METHOD	MINIMUM REQUIREMENTS
APERTURE SHAPE		TRIANGULAR
RIB PITCH (IN) LONGITUDINAL	DIRECT MEASURE	1.6
RIB PITCH (IN) DIAGONAL	DIRECT MEASURE	1.6
MID RIB DEPTH (IN) DIAGONAL	DIRECT MEASURE	0.08
MID RIB DEPTH (IN) TRANSVERSE	DIRECT MEASURE	0.06
MID RIB WIDTH (IN) DIAGONAL	DIRECT MEASURE	0.04
MID RIB WIDTH (IN) TRANSVERSE	DIRECT MEASURE	0.05
RIB SHAPE		RECTANGULAR
APERTURE SHAPE		TRIANGULAR

TABLE 4		MINIMUM CELLULAR
CONFINEMENT REQUIREMENTS		
GEOTEXTILE PROPERTY	ASTM TEST METHOD	MINIMUM REQUIREMENTS
MATERIAL COMPOSITION	D 1505	POLYETHYLENE
MATERIAL DENSITY (LB/FT <sup>3</sup> )	D 1505	58.4
CELL DEPTH (IN)	DIRECT MEASURE	8
CELL LENGTH (IN)	DIRECT MEASURE	8.8
CELL WIDTH (IN)	DIRECT MEASURE	10.2
MINIMUM CELL SEAM STRENGTH (LBF)		640

- EARTHWORK NOTES
- SUBSURFACE SOIL CONSISTS OF SOFT CLAY, SILT, PEAT, AND LOOSE SANDS. GROUNDWATER IS AT OR NEAR THE GROUND SURFACE.
  - PRIOR TO CONSTRUCTION ENSURE ADEQUATE WEEP AND DIVERSION DITCHES TO PROVIDE STORM WATER CONTROL DURING THE GRADING PROCESS. PERFORM EXCAVATION AND FILL IN A MANNER AND SEQUENCE THAT WILL PROVIDE PROPER DRAINAGE AT ALL TIMES.
  - WHERE INDICATED OR DIRECTED, STRIP TOPSOIL TO A DEPTH OF 4 INCHES. REMOVE ALL SURFACE VEGETATION OR STUMPS WITHIN THE CONSTRUCTION LIMITS. PLACE FILL TO ESTABLISH SUBGRADE ELEVATIONS. IT MAY BE NECESSARY TO PLACE FILL MATERIAL ON SURFACES THAT ARE SATURATED.
  - DUE TO THE NATURE OF THE SOFT SOILS ON SITE, PROOF ROLLING WILL NOT BE REQUIRED.
  - AFTER SUBGRADE ELEVATIONS ARE ESTABLISHED, PLACE NON-WOVEN GEOTEXTILE FABRIC ALLOWING A MINIMUM OF A 2 FT. OVERLAP OF FABRIC. GEOGRID SHALL BE PLACED ON TOP OF THE NON-WOVEN GEOTEXTILE FABRIC ALLOWING A MINIMUM OF A 2 FT OVERLAP OF GEOGRID. THE CELLULAR CONFINEMENT IS TO BE PLACED ON TOP OF THE GEOGRID AND FILLED WITH ABC STONE. CONTINUE TO PLACE ABC STONE IN LIFTS OF 6 INCHES OR LESS AND COMPACT TO A MINIMUM OF 85 PERCENT OF ASTM D 698 MAXIMUM DRY DENSITY.
  - ALL FILL AT TIME OF PLACEMENT SHALL BE AT A MOISTURE CONTENT RANGE OF +/- 3 PERCENT OF THE OPTIMUM ESTABLISHED FROM LABORATORY TESTING. IN NON-COHESIVE SOILS COMPACTION SHALL BE MADE WITH A 2 TO 4 TON VIBRATORY DRUM ROLLER. WHEN COMPACTION TAKES PLACE NEAR THE WATER TABLE, VIBRATION SHOULD BE MINIMIZED ON NOT USED AT ALL TO PREVENT WATER FROM INFILTRATING IN UPPER LAYERS.
  - AT LEAST 1 FIELD DENSITY TEST, ASTM D 698, SHALL BE MADE FOR EACH 2,000 SQUARE FOOT OF EACH LIFT WITHIN THE PAVEMENT AREA. A MINIMUM OF 1 TEST PER LIFT IS REQUIRED.
  - ENSURE THAT VEHICULAR TRAFFIC IS LIMITED ON PREPARED SURFACES TO AVOID WEAKENING UNDER TIRE LOADING.
  - USE COMMON FILL MATERIALS AS REQUIRED TO MEET FINISHED GRADES UNLESS NOTED OTHERWISE. COMMON FILL MATERIAL IS CLASSIFIED BY ASTM D 2487 AS: GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SW-SM, SP, SM, OR SP-SM, FREE OF DEBRIS, ROOTS, WOOD, SCRAP MATERIAL, VEGETATION, REFUSE, SOFT UNSOUND PARTICLES, AND FROZEN, DELETERIOUS, OR OBJECTIONABLE MATERIALS. UNLESS SPECIFIED OTHERWISE, THE MAXIMUM PARTICLE DIAMETER SHALL NOT EXCEED 1/3 THE LIFT THICKNESS AT THE INTENDED LOCATION.
  - SELECT FILL MATERIAL IS CLASSIFIED BY ASTM D 2487 AS: GW, GP, SW, SP, SM, OR SP-SM. UNLESS SPECIFIED OTHERWISE, THE MAXIMUM PARTICLE DIAMETER SHALL NOT EXCEED 1/3 THE LIFT THICKNESS AT THE INTENDED LOCATION.

TYPICAL FILL SECTIONS

NOT TO SCALE C-101 THROUGH C-125 (A1)

DATE: #/ #/ #  
 MARK: #/ #/ #  
 DESCRIPTION: #/ #/ #  
  
 PRE-FINAL NOT FOR CONSTRUCTION  
 SEAL  
 APPROVED: #/ #/ #  
 FOR COMMANDER NAVFAC: #/ #/ #  
 ACTIVITY: #/ #/ #  
 SATISFACTORY TO DATE: #/ #/ #  
 DES: HRB [ ] DRW: HRB [ ] CHK: CBM [ ]  
 PMDM: H.BREWSTER III, P.E.  
 BRANCH MANAGER: CBM [ ]  
 CHIEF ENGINEER: HSDC [ ]  
 FIRE PROTECTION: #/ #/ #  
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND  
 NAVAL AIR STATION OCEANA - VIRGINIA BEACH, VIRGINIA  
 NAVY DARE BOMBING RANGE DARE COUNTY, NORTH CAROLINA  
**DARE COUNTY BOMBING RANGE SITE IMPROVEMENTS**  
 DETAIL SHEET  
 SCALE: AS NOTED  
 PROJECT NO.: 1682190  
 CONSTR. CONTR. NO.: #/ #/ #  
 NAVFAC DRAWING NO.: #/ #/ #  
 SHEET # OF #  
**C-501**  
 DRAWFORM REVISION: 14 SEP 2023